# THE ZOOLOGIST.

THIRD SERIES.

Vol. X.] APRIL, 1886. [No. 112.

## THE FINWHALE FISHERY OF 1885 ON THE NORTH EUROPEAN COAST.

By Alfred Heneage Cocks, M.A., F.Z.S.

The season of 1885 was a very remarkable one. On the one hand, Rudolphi's Rorqual, which was previously only known to the eastward of the North Cape as an accidental straggler, appeared last year in thousands along the whole coast whose waters are hunted by the Norwegian and Russian Finwhalers, over 700 of this species having been captured; on the other hand, Sibbald's Rorqual, or the Blue Whale, hitherto the principal object of pursuit, was extremely scarce, several of the Norwegian companies not having taken a single example, the average being less than one per boat; while the Russian boats averaged exactly half a dozen each, the number of this species killed by the three Russian companies actually exceeding that taken by the nineteen Norwegian establishments.

The total capture of *Balænopteridæ* off the north coast of Europe last season reached the enormous number of about 1400 Whales. The amount of oil procured, however, was not much more (and proportionately considerably less) than that from the total of something under 500 Whales killed in 1884, since one Blue Whale gives as much as ten or a dozen Rudolphis'.

The following is probably a fair estimate of the relative values of the different species of Finwhale hunted; reckoned in petroleum casks, which hold from 40 to 44 gallons each, the nett

BRITISH MUSEUM

weight of this quantity being about 170 kilogrammes, = about 3 cwt. 40 lbs.:—

A Blue Whale gives an average of about 70 casks of oil (not often less than 60, and occasionally up to 100).

A Common Rorqual gives an average of about 25 casks (seldom less than 20, and reaching up to 35).

A Humpback gives an average of about 15 casks (seldom up to 20, and rarely even 30).

A Rudolphi's Rorqual gives an average of about 5 casks,* and occasionally up to 7.

Captain H. Ellevsen classes the oil somewhat differently to the classification given me by Captain Andreeff last year (Zool. 1885, p. 140), *viz.*:—

Class 1.—From the blubber of the back. That from the Common Rorqual is clearer than that from the Blue Whale, but they are mixed indiscriminately and considered as the same class. The oil from Humpback and Rudolphi's Rorqual are slightly inferior to the other two species.

Class 2.—From the blubber of the under side and tongue.

Class 3.—From the intestines and second boiling of the blubber.

Class 4.—From the bones and meat.

The colour of the oil depends on the amount of boiling; first class oil can be made as dark as fourth class by more boiling. The relative amounts of each class of oil can be approximately seen by the results obtained by Capt. Sörensen from 76 Whales in petroleum casks:—1st quality (upper side), 653; 2nd quality (under side), 209; 3rd quality (2nd boiling), 80; 4th quality (krang). Most of these were boiled down at the Guano Factory, where, from 200 krangs, 900 casks 4th class oil were obtained (in addition to the guano).

---

* Since the above was written I have looked over the MS. of a paper by my friend Professor Robert Collett, of Christiania, about to be published in the Trans. Zool. Soc. "On the external characters of *Balænoptera borealis*," in which he puts the average amount of oil obtained from individuals of that species at 15 barrels. This, perhaps, includes all the oil, while the above figures only include the oil extracted from the blubber, without reckoning the inferior quality from the *krang*, i. e., the flesh, bones, &c. Also, Professor Collett's barrels may, perhaps, mean the Norwegian *Tönde*, a measure equal to about 30 gallons, instead of the American petroleum cask holding from 40 to 44 gallons.

Three-fourths of this number (*viz.*, 76, not 200) consisting of small Whales, and the remaining quarter including no Blue Whales, the amount is naturally smaller than the average from that number of mixed *Balænopteridæ;* but the proportion of each quality also would not always hold good, as the relative amount of each quality differs in the different species, and young Whales have more blubber than old ones; the time of year also makes some difference.

The system of converting the krang into guano is becoming more general, and a large quantity is now manufactured. The following figures will give some idea of how extensive this branch is:—The Haabet Company and the Christiania Whaling Company have each about 6000 sacks of guano; "Jar Fjord Cattle-tonic and Glue Company" (Kraftfoder* og Lim Fabrik) has from 5000 to 6000 sacks; and Ara 1700 sacks: total about 19,000 sacks, holding 100 kilos. (4 bushels).

With regard to the value of the oil, I cannot do better than quote from a letter received in November from Capt. David Gray, of Peterhead, and which he has kindly given me leave to make public. He says:—"Our home markets have been overstocked with it so much that we cannot now sell a single ton of oil at a price that would pay the bare expense of taking it. Norwegian Finner-oil is now selling in London at £13 per ton. Our own Whale-oil is now only £22, instead of £40 as it used to be. It is also much the same with the Seal-oil. . . . . . In 1882 I opened up a new fishery, *viz.*, the Bottle-nose. . . . . . I could readily get from £50 to £60 per ton for the oil. The Norwegians got notice of it through our newspapers, sent out a number of ships,—in fact elbowed us out of it: they are now selling this oil in London at £25 per ton. It cost me £32 per ton to deliver it in London, so you can easily see that soon stopped us catching the Bottle-noses. I thought at first that I had 'struck oil,' having killed in two months 203 of them, yielding 232 tons, which I sold in London for £12,700. We could live and thrive at those prices, but I would not send a boat after them now."

Capt. Gray goes on to give a gloomy view of the Greenland Whaling, which, though foreign to the subject of this paper, is of so much interest that I may hope to be excused for quoting it:—"There is a great outcry at present about the failure of the Dundee ships this season. They have themselves entirely to blame. They steam about so much on the whaling banks that they have scared all the Whales through to Behring's Straits, and only left a few suckers on our side, who are not old enough to take care of themselves. We are also suffering from the stupid way in which the Whales were killed say fifty years since, and Davis Straits has been undergoing a process of extermination for the past two hundred years. There will soon be a close time for Whales. Dundee is going to work out of it. They are not going to renew any of their ships: they are losing some of them every year. Here (Peterhead) we have only three first-class ships in the trade instead of twenty-eight, which we had twenty-five years ago. Besides all this, the oil is not wanted, even at the present low prices. We have great doubt here whether we will send our ships out again in the spring, having over a thousand tons of oil lying unsold, and cannot get a market for it."

---

* Kraftfoder (lit. "strength-provender"), is intended as a tonic for cattle, and not merely as manure (Zool. 1885, p. 137).

Very few Whales were to be seen on my passage north in August. When crossing Vest Fjord (where one generally expects during the summer to see some cetacean life) to the Lofodens and back, on the 14th, the sea was too high to allow of our seeing any Whales that might have been there, although others besides myself kept a careful look-out. The following day, to the north of Maalsnæs, we saw a small Whale; and others, on the 17th and 18th, off the East Finmarken coast. One of these, which I did not see, may have been, from the description, a Humpback, but all that I saw appeared not to exceed 20 ft. in length; the back-fin appeared small and low. I did not see any of them spout, and they moved somewhat sluggishly. I do not think they were any of the *Balænopteridæ*, but possibly Pilot or Caa'ing Whales (*Globiocephalus melas*). On the 18th (off Tana Fjord), we passed three whalers cruising; one, which was about six miles off shore (five from us), fired, and, as she immediately altered her course to nearly the opposite direction, and kept on turning, she was probably "fast."

Humpback (Vardö, Aug. 20th).—A male, about 35 ft. long, was entirely black on the under side, except a not clearly-defined patch of white near each point of the under side of the flukes: some very small spots of white on the chin and belly were all, I think, without exception, scars where *Diadema coronula* had been. There was a large cluster of small examples of this cirriped on the chin, another on each side on the fold of skin covering the penis, a small cluster on the back a few feet from the head, and some on the flippers. The examples were all small, none being of larger diameter than a florin, and there were no examples of *Conchoderma auritum*, unless there were any on the extreme point of the chin (at the symphysis of the lower jaw, which was still under water when I left, when it was getting dark. I noticed that *Diadema coronula* can see on land, at a distance of about one inch, the "cirri" of live examples being retracted when my finger approached within about that distance of them. The flippers of Humpbacks are invariably (with the infrequent exception of a few very small marks) all white on the inner side, but the coloration on the outer side varies considerably. In this individual they were black for only a very short distance at the proximal end. The lower jaw measured 12 ft. 10 in. in a straight line. The fin of the Humpback rises very gradually from fore to aft; a better way of describing it, perhaps, is to say that the line of the back rises gradually for a length of about 4 ft., of which the after 1 ft. 4 in. (as in this example) comprises the actual fin, the posterior free edge being deeply indented, almost a semicircle, and measuring (in this example) 8¾ in. from the upper point to the line of the back. The back behind the fin continues level with, or slightly lower than, the line of the back anterior to the base of the fin. The next morning I found that three Humpbacks had been brought in during the night to one of the factories, and two of them were already flensed. One of these measured 44 ft. following the curves; the other was two or three feet shorter. The flipper of the larger of these two measured 14 ft. 4 in. in length, and that of the smaller 13 ft. 10 in. in length, and 3 ft. 4½ in. across at the uppermost projection. About the proximal quarter of the outer side of the flipper of the latter was black, the black extending down the anterior edge, with a few small irregular black marks lower down. The third specimen, a male, measured 42 ft. along the curves, and was entirely black on the belly, but nearly the whole of the thorax (*i. e.*, chest and throat) was white, the chin being black, with a few small white flecks. The concavities of the plaits or ribbings were of a light purplish flesh-colour. There was a small streak of white about 1 ft. by 3 or 4 in. on the upper lip about half-way along the gape; very little black on the outer side of the flippers, including a narrow rim along the hinder edge. Clusters of *Diadema coronula*, as usual, some individuals being fairly large (but none of them equal to specimens I obtained in 1884), and a few of them had *Conchoderma auritum* attached to them, but no large examples. The gape of the mouth, measured along the curve of the upper jaw, was 9 ft. 10 in. Length of flipper, 12 ft. 11 in. Width of skull opposite blow-holes about 3 ft. 11 in. Tip of nose to inner edge of blow-holes, 8 ft. 2 in. Distance between blow-holes at inner corner, 2½ in. Flukes, fore and aft, at central notch or fork, 3 ft. 8 in. On the 22nd I saw the 'Kiberg' towing rather a small male Humpback, which had evidently been killed a few days previously, as it was much distended. The chin was black, but I could see some white on the under jaw; the throat and chest white, as far aft as the point of maximum girth (the end of the ribbings); the remainder of the lower side black. Capt. Selliken informed me that a fœtus of this species, which he had found in June, measured one foot. Capt. Berg told me that he had this season captured the biggest Humpback he has hitherto seen. It was a female, and measured 50 Norwegian feet (52 ft. English) in a straight line (measured as Dr. Guldberg had directed). Its girth was 40 ft., but this would, of course, alter very materially, according to the degree of inflation. The blubber filled two of the large boilers. Capt. Horn told me that on the passage north of his whalers last spring, after passing Nordkyn on March 6th, Humpbacks were very numerous all along the coast. More of this species were killed last season than in any previous year, but this is not necessarily the result of their being more numerous, but because, in the absence of the more profitable species, they were hunted in preference to the least profitable species (*B. borealis*); 96 were killed last season as against about 70 in 1884, a lesser number in 1883, and previous to that year very few, if any at all. The blubber of the Humpback takes rather a longer time to boil down than either of the Rorquals.

Blue Whale.—At Yeretiki (Murman coast), on Sept. 1st, I measured the krang of a Blue Whale, which was 79 ft. following the curves, which would not, however, have made 2 ft. difference probably, and *per contra*, the back was bent, and the under jaw off. Nose to back of blow-holes, 14 ft. Flipper over 10 ft. long, but, as I could not distinguish the head of the humerus in the mass of displaced krang, I was unable to measure it accurately. Greatest width, 2 ft. 7 in. Skull at the widest point (zygomatic arches), 9 ft. 6 in.; immediately in front of the zygomatic arches, 6 ft. In a heap of under-jaw bones of this species at this factory were some very large specimens: one measured 36½ in. in height at the coronoid process; several other maxillæ were piled across it, so I could not measure its length, but another very large ramus, which may have been its fellow, measured 21 ft. 9 in. along the curve; of this one I was unable to measure the height. Some baleen plates here measured 34 in. by 24 in., and would have been probably fully 8 in. wider when in the mouth, before the small inner part was cut off. These were, I think, the largest I have met with. Captain Horn, of Yeretiki, told me of the following measurements (Norwegian) of this species which he had taken this season:—July 12th, female, 85 ft.,* no fœtus, very fat, giving about 95 petroleum casks of oil; July 24th, female, 82 ft., with milk running; ditto, male, 75 ft.; Aug. 9th, female, 81 ft. The first Blue Whale killed off Yeretiki was on June 6th, a female, 72 ft. (Norwegian) long. With the exception of Ara (June 15th), I do not know the date of killing the first by any of the ships, except the 'Glimt,' which took one in May, which was considered unusually early.

Common Rorqual. — Capt. Horn informed me that on his passage north with his whalers in the beginning of March, he only saw two or three of this species. He only found one fœtus during the season, about 4 ft. (Norwegian) long, in an example killed May 7th, measuring 62 ft. (Norwegian). Capt. Fredriksen (Kobholm Fjord) found a fœtus in (he believes) April, about 5 ft. long, and each succeeding one was bigger, until, on July 2nd, he found one about 12 ft. long. A small example, killed by one of Capt. Sörensen's boats on Sept. 7th, measured 57 ft. (English) in a straight line. Nose to blow-holes, 9 ft. 6 in. Nose to eye, 10 ft. 3 in. Length of flipper, 6 ft. 5 in. Spread of flukes,

---

* These measurements were probably taken following the curves, but, as the Norwegian foot equals almost exactly 12½ in. English, it must at least have been over 80 ft. long.

11 ft. 5½ in. by 2 ft. 10 in. broad, at about 9 in. from central notch. Colour almost black above, shading off on under side, through streaks of grey, to a little white about the centre of each lobe. Transverse diameter of smallest part of tail, close to flukes, 1 ft. ½ in. Between extreme points of blow-holes, 10 in. This specimen was obtained to the westward of Vardö; about the same date several were met with about seven sea-miles (equal to twenty-eight English land-miles), N.E. of Swjatoi Nos,—that is, about one-third of the way across between there and Kanin Nos,—the headlands forming the mouth of the White Sea; but a tug, which towed two individuals back to Yeretiki (Sept. 5th to evening of 7th), saw no Whales of any kind to the westward of Swjatoi Nos. Capt. Sörensen took a Common Rorqual this season 45 ft. long, which was still following the mother, and had only milk in its stomach. Two flippers, which I measured at Skjærsnæs Factory, were 8 ft. 6 in. and 8 ft. 8 in. respectively. These must have belonged to large specimens.

Rudolphi's Rorqual (Coal-fish or Capelan Whale).—In the year 1884, so far as my information goes,* only five of this species were killed along the whole coast worked by the Fin-whalers, and, though this species is left alone when larger Whales are to be had, yet it is quite certain that it has hitherto only appeared as a straggler to the eastward of North Cape, though, as a rule, it appears in tolerable numbers off the West Finmarken coast (Capt. Bull, from his station on Söröen, killing fifteen in 1883). Last year I was assured that thousands of this species lay off the N.W. point of Söröen for three weeks during June (Capt. Bull, with his two steamers, taking sometimes as many as four a day); and also that an immense number remained off Sylte Fjord (East Finmarken) for about three weeks in May and June; while they were common along the whole coast during nearly the entire season. They appear, however, to have reached the Russian coast rather later, the first killed by one of the Yeretiki steamers being on July 10th, and the first by one of the Ara steamers two days later, which would pretty closely mark the date of their arrival. Herr Weil, who has the establishment on Söröen for tinning the "beef" of this Whale, increased his staff and machinery, but even then could not use all the flesh. The fact that upwards of 770 Rudolphi's

---

* Namely, from fifteen out of the nineteen companies.

Rorquals were killed last season, although, from the small amount of blubber to be got from them, they are never hunted when there is a chance of any other Whale, fully shows how numerous this species was. I was not fortunate enough to have an opportunity of examining closely a Whale of this species in its entirety, but only a few krangs, among which was that of a male flensed just before I arrived at one of the factories at Vardö on the morning of August 25th. This had been taken off Kildin Island, on the Murmanski coast. It measured 45 ft. along the curves, or probably about 43 ft. in a straight line. Nose to inner edge of blow-holes, 7 ft. 9 in. The blow-holes are set at about right angles to long axis, and adjoin. Width of skull, opposite blow-holes, 3 ft. 6 in. Lower jaw, 11 ft. 6 in., along outside of curve. Although the blubber was cut off, the pieces were still lying close by, showing that the back was jet-black, light greyish slate colour on sides; purplish white on belly, the concavities of the ribbings purple or livid colour, but black extending over part of the ribbings; the amount of grey and white is said to vary in different individuals.* Flukes, fore and aft, to central fork, 2 ft. 9½ in. Black above, light greyish lead-colour underneath. Fin large and upstanding, about 21 in. high, and about 2 ft. 8 in. along the base. The flippers were 6 ft. long, jet-black all over, both sides alike. In the example of Rudolphi's Rorqual from the River Crouch (Essex), I noted the under side of the flippers as white, but (as I had only a hasty look at it) I presume this was a mistake, for Professor Flower, in his description of the same specimen (Proc. Zool. Soc. 1883, p. 514), remarks "the flippers being black," and I this year had the opportunity of examining thirty odd pairs of flippers of this species, and they were without exception entirely black *on both sides*. They may be distinguished from the flippers of the Common Rorqual, besides the colour, by the latter being blunt-edged, like the flat handle of a plain ivory paper-knife, while the Rudolphi's are sharp, like the blade. This is especially noticeable at the anterior edge, which in the Common Rorqual is thick and rounded, while in Rudolphi's Rorqual it is nearly as thin as the posterior edge. The longest flipper that I could find among the thirty odd pairs measured 7 ft. 6¾ in. to head of humerus. All the saleable portion of the baleen plates were black,* but the small inner portion of many of the plates were white, with from one to two inches of blue-grey between. The bristles would be more accurately described in this species as hair, being soft and fine, and quite white. The longest baleen plates measured about 31 in. by 12 in. A Rudolphi's Rorqual may be distinguished from a Common Rorqual at a glance by the back being jet-black instead of grey-blue, and the white of the under side is much clearer, the whole skin having a fine silky appearance. The black of the upper side is not of a perfectly uniform tinge, but is here and there a shade less intense. This species is so small for the enormous harpoons in use, that I was assured that at least in one instance the harpoon passed right through the Whale, and the shell exploded on the other side! In the individual just described the harpoon was buried to the butt. The bone of the lower jaw of Rudolphi's Rorqual is said to be harder than in either of the other species. The only fœtus of this species found by Capt. Horn this season measured 5½ ft. (Norwegian), on July 28th. The only example which I saw in its entirety was riding to a buoy, in which position I was unable to examine it closely.

---

* In the paper on this species by Prof. Collett, previously referred to, he says that this species during life is not much darker than the Blue Whale. That many (possibly all) species of Cetacea become darker after death is well known, but, while some pieces of the epidermis of the Blue Whale, which I obtained in 1884, remain of a grey-blue colour (not particularly dark), a portion of the epidermis of this specimen is jet-black, as it was when I peeled it off.

Captain Andreeff kindly gave me the following list of all the Whales taken by his steamers into Ara Bay this season; I have substituted the new style dates for the old style (by adding twelve days); the lengths are in feet, which he informed me were identical in Russia and England:—

March 30. Common Rorqual. Female. Length, 61½ ft.
April 4. ,, ,, ,, ,, 50½ ft.
,, 9. Bastard.† Female. Length, 68 ft.
,, 29. ,, ,, ,, 72 ft., containing fœtus, 3 ft. 4 in. long, and 27½ lbs. Rus. = about 22 lbs. Eng.
May 6. Common Rorqual. Male. Length, 43 ft.

---

* Prof. Collett has described the variations in the colouring of the plates very carefully in detail in the paper already mentioned.

† I have reckoned the "Bastards" as Common Rorquals in the table on page 136.

May 8. Common Rorqual. Female. Length, 65 ft.
June 8. ,, ,, ,, ,, 62 ft.
,, 15. Blue Whale. Female. Length, 70 ft.
,, 23. ,, ,, ,, ,, 77 ft. Found dead.
,, 26. Common Rorqual. Female. Length ?.
,, 28. ,, ,, Male. Length ?.
July 2. Blue Whale. Male. Length ?. Found dead.
,, 7. Humpback. Female. Length ?.
,, 11. Blue Whale. Male. Length ?. Found dead.
,, ,, Humpback. Male. Length, 49 ft.
,, 13. Rudolphi's Rorqual. Female. Length, 40 ft.
,, 15. ,, ,, ,, ,, 45 ft.
,, ,, ,, ,, Male. Length, 47 ft.
,, 18. ,, ,, ,, ,, 45 ft. Found dead.
,, 22. Blue Whale. Male. Length ?.
,, 25. ,, ,, ,, ,, 70 ft.
,, 26. Rudolphi's Rorqual. Sex, ?. Length, 40 ft.
,, ,, ,, ,, ,, ?. ,, 43 ft.
,, 27. ,, ,, ,, ?. ,, 42 ft.
,, 28. ,, ,, ,, ?. ,, 41 ft.
,, 29. ,, ,, ,, ?. ,, 42 ft.
Aug. 1. ,, ,, ,, ?. ,, 41 ft.
,, 3. ,, ,, ,, ?. ,, 43 ft.
,, 5. ,, ,, ,, ?. ,, 42 ft.
,, 13. Blue Whale. Female. Length ?.
,, ,, ,, ,, ,, ,, 76 ft.
,, 14. Rudolphi's Rorqual. Male. Length, 39 ft.
,, 17. Common Rorqual. Female. ,, 57 ft.
,, ,, ,, ,, ,, ,, 45 ft.
,, 19. Blue Whale. Male. Length, 77 ft.
,, 20. Common Rorqual. Female. Length, 45 ft.
,, 26. ,, ,, ,, ,, 53 ft.
Sept. 9. ,, ,, ,, ,, 45 ft.
,, ,, ,, ,, ,, ,, 63 ft.
,, ,, Blue Whale. Female. Length, 71 ft.

Various accidents occurred among the whaling fleet during the season, the most serious being the loss of the 'Glimt.' She was a new ship last season, owned by a newly-formed company, who established a factory, 'Bugten,' on the mainland, opposite Vardö (close to the 'Thekla' Factory). The manager was Capt. Grönn, who the previous season had been manager of the Kobholm

Fjord Factory. The 'Glimt' made a very successful beginning, taking a Blue Whale in May.

One rough evening in June, when off Kildin Island, on the Murman coast, her commander, Captain Larsen, was sitting reading in the cabin. The sun being at that time above the horizon throughout the twenty-four hours, there was no light burning, and Capt. Larsen was not smoking. Without any apparent cause the powder, amounting to about 80 kilos. (more than 1½ cwt.). which was kept in the cabin, exploded. Captain Larsen was hurled, frightfully burnt, through the broken skylight, while the vessel was reduced to a complete wreck, and was burning fiercely. The crew took to the whale-boat, taking Capt. Larsen with them, who was completely blinded, the skin being entirely burnt off his face and hands, and otherwise injured. It blew a gale of wind, and for fifteen hours he lay helpless in the bottom of the boat in agonies, which were terribly aggravated by lying in salt water, for the seas broke over the boat constantly, filling it, and every moment threatening to swamp it. He gradually began to lose sensation, the numbness creeping slowly upwards from the feet, and he felt that, if the numbness should reach as high as his stomach, it would put a fatal termination to his sufferings. Happily, before this occurred the boat was picked up by another whaler, which at once steamed off to Yeretiki, the nearest oasis of civilisation, where he received every possible attention at the hands of Capt. Horn. He was thence taken by sea to Vardö, and from there he eventually proceeded home. I am happy to be able to add that he has recovered his sight, and the last account I heard of him was that he was in a fair way to convalescence; but it may be doubted whether he will ever again undertake the command of a whaler where so large an amount of powder on so small a vessel must always be a source of danger, and, though all the managers are going to adopt extra precautions during the approaching season, they expect this accident will largely affect the rates of insurance.

Several accidents have at different times occurred from the premature explosion of the harpoon-shell. A man belonging to one of the East Finmarken boats was badly injured at the beginning of last season in this way, and was an inmate of the Vardö Hospital nearly all the summer.

Capt. H. Ellevsen told me that on one occasion (in 1884), his whaler (the 'Nora') had harpooned a small Whale, which was not heavy enough to open the barbs and explode the shell. A boat went off to lance it, but Capt. Ellevsen, realising the danger from the unexploded shell, ordered them to cut the line. Before this could be done, however, the shell exploded and smashed the boat, fortunately without injuring any of the men, who were all picked up. (A similar disaster nearly befel a boat's crew in lancing a Humpback in 1883, as described in 'The Zoologist,' 1884, p. 420, and similar near shaves are probably not rare). The charge for the harpoon-gun is 15 lod, or $233\frac{6}{10}$ grammes, more than half a pound avoirdupois, while the shell contains, I believe, over $\frac{3}{4}$ lb.; so the whalers are obliged to carry rather a large quantity with them.

Besides these accidents caused by gunpowder, a new form of disaster occurred last season,—the charging, by Whales, at the whaling-ships, or harmless fishing-boats. The following account was given me by Capt. Sörensen, which I have translated as literally as possible from the Norwegian original:—

"Whales were not previously known in these regions to have done so much mischief as during this summer, when, besides destroying several fishing-boats, they also caused damage to certain whaling steamers. The first news of the Whales' destructiveness was during the Capelan-fishing this year, when, at the beginning of the month of May, a fishing-boat, belonging to the commandant of Vardöhus Fort, was run down and entirely destroyed by a Common Rorqual. The crew were with difficulty saved by other fishermen, who were lying in proximity, but the boat and the good catch in it at the time were lost. A short time subsequently two similar wreckings of boats were reported.

"The first whaler which had to sustain a conflict with a Whale was the steamer 'Vardöhus,' belonging to the 'Haabet' Whaling Company. This ship, on the 21st of May, shot a Common Rorqual, which, as it did not die immediately, was given a second harpoon 'in the life,' after which it lay as if dead. So the crew made all ready to heave it in, and go home to Vardö with it; but, to the crew's amazement, it again showed signs of life, and came rushing at a furious pace against the ship, and rammed her at the stern-end, with the effect of bending the rudder and stern-post to one side. It gave the ship butt after butt, and freed itself at the same time from the two harpoons: at last it quitted the vessel, and it was seen to spout blood at a distance of nearly 100 alen (about 70 yards), but it then turned back again for a charge at the steamer, which could not get away, as both the rudder and propeller were rendered useless by the first collision, and struck the steamer this time at the bow, without, however, causing damage. After this the Whale was not seen, and the 'Vardöhus' was next day towed in by one of her colleagues to Vardö, where eight days were passed before the ship was again in a condition to take the sea.

"In the month of July the steamer 'Fiskeren,' belonging to the 'Laurvig' Whaling Company, was damaged in the same manner, likewise by a Common Rorqual, and had to go to Tromsö to have the injury repaired; and finally, in the month of August, the steamer 'Pasvig,' belonging to the Whaling Company of the same name, was charged by a Whale, which struck her amidships, close by the engine-room, and with such force that three iron buckets were broken, several iron bolts were loosened, and the plates were deeply dented. Fortunately the steamer's injury was so high out of the water that she did not fill with water, as in all probability would have been the case if the injury had been situated under the water-line."

I have the following few alterations and additions to make to the table of the different companies and their takes in 1884, published in 'The Zoologist' for 1885, p. 143:—

S. Foyn himself managed his factory at Böle (on Söröen) in 1884. Since then the Vadsö factory has remained closed, and Bull has managed Böle, while Foyn conducted his new establishment at Mehavn. The Kiberg Company only had one whaler last year. Sylte Fjord Company should have been called the Bergen Whaling Company, M. A. Selliken, manager, Foden being the captain of the whaler 'Skytten.' She took 10 Blue, 8 Fin, 0 Rudolphi's, 7 Humpbacks; and this total (25) includes one Whale found dead. This season the establishment is Capt. Selliken's own. The other establishment in Sylte Fjord (Dahl's, who is now dead), took 8 Blue, 5 Fin, 0 Rudolphi's, 10 Humpbacks; total 23. At Tu Fjord, the name of the manager is Andreasen.

The alterations in the spelling of the Russian factories are according to the latest local fashions. "E" at the commencement of a word in Russian has the equivalent force of the English "Ye"; the reduplication of the "r" in Ara seems somewhat arbitrary, but the single letter is possibly the more correct, and the addition of "Guba,"= Fjord or Gulf, is necessary, as the omission is more meaningless than talking of "Forth" or "Pentland," &c., without the word "Firth" would be, as the latter are named from some place on the land; but Ara is, I believe, simply the name of that Fjord.

It will be noticed that nearly all the companies have given up employing tug-steamers since the previous year.

In the following table of the whaling companies and their takes in 1885, the new names, whether of companies, managers, or ships, are in italics; I believe the numbers of Whales here given to be very nearly exact, within half a dozen probably. A dead Humpback drifted ashore on Kildin Island (Murman coast) early in September; it was flensed on the spot by a colonist, and the oil was subsequently sold to Yeretiki. I believe this example is not included in the return thence; and, on the other hand, Whales killed at a distance from the factory to which the steamer belongs are occasionally sold to the nearest factory, and may *possibly* appear in the totals of both establishments. There may possibly be other sources of slight error.

There is said to be a third company now established on Söröen, at Aker Fjord; manager, Sörensen; port of register, Arendal; with one vessel, the 'Neptun'; but, as I have not succeeded in learning any particulars except the popular report that the take had been *nil*, I have not included it in the table.

I have to express my indebtedness to my friend Prof. Collett, who had included a similar (but rather less complete) table in the MS. of his paper before mentioned, given him by Captain Sörensen, but at once courteously withdrew it on finding that I had a sort of "prior claim," having arranged it myself, and ascertained the majority of the figures. I have also to thank Capt. Sörensen for supplying me with many of the items; and several of the other resident managers as well, some of whose names are mentioned in the preceding pages.

| Company. | Manager. | Port of Register. | Whalers. | Blue Whales. | Common Rorquals. | Rudolphi's Rorquals. | Humpback. | Total. | Whalers' Name. |
|---|---|---|---|---|---|---|---|---|---|
| *East Finmarken:* Kobholm Fjord | *Fredriksen* | Sandefjord | 2 | 0 | 25 | 50 | 3 | 78 | Skjold, Værge. |
| Stokke, Pasvig | A. Ellevsen | Tönsberg | 2 | 5 | 32 | 43 | 7 | 87 | Varanger, *Pasvig.* |
| Jar Fjord | Evensen | Do. | 2 | 3 | 45 | 40 | 5 | 93 | Jar Fjord, Hvalen. |
| Do., Madvig | L. Hansen | Christiania | 1 | 0 | 18 | 16 | 3 | 37 | Madvig. |
| Do., Tamasjok | C. Bruun | Tönsberg | 1 | 4 | 10 | 13 | 0 | 27 | Emanuel. |
| Kiberg | Wiborg | Throndhjem | 2 | 0 | 21 | 58 | 3 | 82 | Kiberg, *Nidaros.* |
| Mainland opposite Vardö—Christiania Whaling Co. | Castberg | Christiania | 2 | 2 | 24 | 66 | 7 | 99 | Alpha, Beta. |
| Do., Laurvig Whaling Co. | Berentsen | Laurvig | 2 | 2 | 30 | 64 | 2 | 98 | Fiskeren, Nimrod. |
| Do., "Thekla" | I. Bryde | Sandefjord | 1 | 0 | 18 | 44 | 3 | 65 | Thekla. |
| Do., *Bugten* | A. Grönn | Do. | 1 | 1 | 5 | 0 | 0 | 6 | *Glimt.** |
| Vardö, "Haabet" | G. Sörensen | Do. | 2 | 0 | 20 | 48 | 8 | 76 | Vardohus, Haabet.† |
| Do., Skjærsnæs | H. Ellevsen | Tönsberg | 2 | 2 | 27 | 60 | 9 | 98 | Nora, *Otter.* |
| Sylte Fjord | M. A. Selliken | Bergen | 1 and a tug | 1 | 34 | 41 | 6 | 82 | Skytten. |
| Do., *the late* Dahl's Establishmt. | Berg | Tönsberg | 1 | 1 | 18 | 32 | 7 | 58 | Victoria. |
| Foyn's Establishmnts., *Mehavn* | S. Foyn | Do. | 2 | 0 | 0 | 31 | 1 | 32 | Gratia, *Arctic.*‡ |
| *West Finmarken:*<br>Do., Böle, on Söröen | T. Bull | Do. | 2 | 2 | 30 | 36 | 5 | 73 | Spes-fides, Providentia.‡ |
| Sörvær, do. | M. C. Bull | Do. | 2 | 3 | 59 | 47 | 8 | 117 | Fin, Frey. |
| Tu Fjord | Andreasen | Do. | 2 | 1 | 12 | 35 | 14 | 62 | Nordkap, *Nordkyn.* |
| *Tromsö* | J. Gjæver | Tromsö | 1 | 1 | 6 | 0 | 1 | 8 | Duncan Grey. |
| *Murmanski Coast:* Yeretiki | *P. A. Horn* | Petersburg | 2 | 12 | 23 | 34 | 2 | 71 | Welda, Murmanetz. |
| Ara Guba | Andreeff (Capt. Imp. Russ. Navy) | Do. | 2 and a tug | 10 | 15 | 13 | 2 | 40 | Helena, Pokrof, Vladymir (tug). |
| Do. | Goebel | Do. | 1 | 8 | 1 | 0 | 0 | 9 | *Emma.*§ |
| | | | 36, 2 tugs | 58 | 473 | 771 | 96 | 1398 | |

* Lost through explosion in June.

† The latter only fished during first part of season.

‡ 'Martha' laid up the whole season.

§ Only commenced in July.

# A REVIEW OF THE SPECIES OF THE GENUS *NUMENIUS*.

### By Henry Seebohm.

The Curlews belong unmistakably to the Scolopacine group of the Charadriidæ. If the bill from the frontal feathers to the tip be divided into four equal parts, the whole of the nasal orifice is found to be situated well within the basal fourth part. From two large groups of Scolopacine birds, the Snipes (*Scolopax*) and the Cleft-toed Sandpipers (*Tringa*), the Curlews may easily be distinguished by the presence of a rudimentary web at the base of the toes; but to distinguish them from the other Scolopacine genera is one of those ornithological puzzles that can only be satisfactorily solved when a careful series of anatomical studies has been completed.

The earlier writers on Ornithology, of whom we may accept Brisson and Linnæus as typical examples, attempted to diagnose the genera of birds. To the best of their ability they endeavoured to enumerate the characters which were sufficient to determine the genus, leaving out of the diagnosis other characters, which may be very interesting and very important, but are not absolutely necessary. Modern ornithologists belong to two schools: those belonging to the old school, than whom no better examples can be found than Yarrell, Newton, and Saunders, simply enumerate the so-called structural characters, leaving the reader to find out for himself, if he can, which of them are diagnostic. No great fault can be found with this mode of procedure, except perhaps that it may be regarded as an attempt to "play for safety," which not unfrequently proves a great incentive to the use of strong language on the part of the bewildered but irascible student, who tries in vain to determine the genus of a strange bird.

Dresser, in his 'Birds of Europe,' has adopted a most original course: he has simply catalogued the structural characters of the type of each genus, without pointing out which of them are common to all the species of the genus, and which of them are exceptional; and, of the former, without a hint as to whether they are common to allied genera, or are diagnostic of the genus, the type of which he is describing. This treatment of the question can only be regarded either as a lame attempt to shirk the difficulty, or as a roundabout mode of expressing his ignorance of the characters of the genus.

The new school of modern ornithologists, of whom Coues, Baird, Ridgway, and Sharpe may be accepted as typical examples, boldly take the bull by the horns, and attempt to construct diagnostic keys to the genera. They may or may not be successful,—unfortunately many of these keys are lamentable failures, and will not turn in the lock,—but all honour to the men who at least try to give definiteness to our knowledge. A short clear definition, even of our ignorance, is better than pages of oracular wisdom.

I find it impossible to construct an entirely satisfactory diagnosis of the genus *Numenius*. Baird, Brewer, and Ridgway place the Curlews in their family *Scolopacidæ*. It is a matter of no importance to the argument whether the group of birds to which the Curlews belong, which consists of the Snipes, Sandpipers, and their allies, be regarded as a family or a subfamily. I think that they ought unquestionably to be looked upon as belonging to the same family as the Plovers and their allies, inasmuch as no line can be drawn between the two groups which is not obviously an arbitrary one. For the sake of argument, however, I am prepared to admit that the classification of the group of birds which are called *Limicolæ* has been accomplished to such an extent that the *Scolopacidæ*, as limited by Baird, Brewer, and Ridgway, can be diagnosed, though the characters may not be as satisfactory as could be wished. The diagnosis of the genus *Numenius*, according to these authors, is as follows:—

*Scolopacidæ* having a strongly decurved bill, longer than the tarsus and middle toe.

The objection to this diagnosis is that it excludes two species which have always been admitted to the genus, *Numenius borealis* and *N. minor*. What have these poor Curlews done that they should be turned out into the cold? It is rather a remarkable fact that they are the only Curlews which have neglected to make any attempt to produce pale bars on the inner webs of their primaries. This neglect may be a specific misdemeanour, but can scarcely be regarded as a generic crime!

Let us see what Coues can do for us. His diagnosis of the genus *Numenius* may be tersely expressed as follows:—

*Scolopacidæ* having a very long decurved bill, and having the tarsus scutellated in front, and reticulated behind.

This diagnosis is extremely satisfactory, with one exception. It excludes *Numenius minor* from the genus. This species has the whole of the tarsus unmistakably scutellated, both in front and at the back, and is in every respect a *Totanus*, except, perhaps, that no species of *Totanus* has the bill quite so much decurved. The difference in the amount of curvature of bill between *Numenius minor* and *N. phæopus* is, however, greater than that between *N. minor* and *Totanus bartrami*. Those ornithologists who are still wedded to the rostral system may, if if they like, accept the following diagnosis of the genus *Numenius*:—

*Scolopacidæ* having the arch of the bill sufficiently great that a straight line, drawn from the gape to the point where the two mandibles meet at the tip, will pass below the lower outline of the under mandible; and (to exclude *Ibidorhynchus*), having the lower half of the tarsus scutellated in front.

The student may inquire why, if the so-called structural characters are so unsatisfactory, do you not settle the matter by appeal to the colour-test? Because colour, and more particularly pattern of colour, dates much too far back to distinguish such closely-allied genera as *Numenius* and *Totanus*. The only important point in which *Numenius borealis*, *N. minor*, and *Totanus bartrami* differ in colour, or pattern of colour, is that the latter species has barred primaries, but unfortunately *T. bartrami* is the only *Totanus* that has barred primaries, and *N. borealis* and *N. minor* are the only species in the genus *Numenius* that have plain primaries.

This is clearly a case for the anatomist to decide, but in the meantime a wise conservatism may allow the two species to remain in the genera in which the instinct of ornithologists has already placed them.

The genus *Numenius*, like *Totanus* and *Charadrius*, may be in a transition state as regards the scutellation of the tarsus. *Numenius minor* and *N. borealis* are so nearly allied that it is difficult at once to find a perfectly satisfactory character upon which to separate them, but, though it is a remarkable fact that the back of the tarsus of the former is distinctly scutellated, whilst that of the latter is as clearly reticulated, the fact is not an isolated one. The case is almost an exact parallel to that of *Totanus incanus* and *T. brevipes*, and it is worthy of note that in both cases the New World species is the one which has what is generally regarded as the older form of tarsus (*i. e.*, reticulated instead of scutellated), but in the Curlew this character is normal, whilst in the Sandpiper it is exceptional.

The geographical distribution of the species belonging to the genus *Numenius* is very interesting, and presents a remarkable similarity to that of the species composing the genus *Hæmatopus*. In many respects the habits of the Curlews resemble those of the Oystercatchers; both groups of birds are principally shore-feeders, and both are occasionally found on the banks of great rivers. The Curlews undoubtedly breed further inland, but the lines of migration of both groups appear to be similar, and it is not improbable, as will hereafter be shown, that they started from a common centre, and may have even migrated in company. In both genera the species may be ranged in four or five groups, apparently originating in the relation caused by their having chosen different coast lines leading from the Polar basin.

The species belonging to the genus *Numenius* may be naturally divided into five groups, as follows:—

| | | |
|---|---|---|
| Lower back much paler than mantle ............ | A | |
| | B | Crown plain brown, with a more or less distinct pale mesial line. |
| | C | |
| Primaries and secondaries nearly uniform brown | D | |
| | E | |

Assuming that the ancestors of the genus were originally inhabitants of the Polar basin, let us first ascertain the probable routes which they would take to escape from the gradually accumulating Arctic ice, and, secondly, what evidence, if any, can be found of the origin of each group.

We may picture to ourselves the ancestors of the species now placed in the genus *Numenius* living in the temperate region of the Polar basin, with other shore birds, during the series of inter-glacial years, immediately succeeding the Glacial Period which isolated and differentiated them into species, these species being the parents of the present genera. Most species of shore birds were then, no doubt, circumpolar, crossing and recrossing the Polar basin at will, their wandering habits originated and perpetuated by the annual necessity of making a short trip every winter into more tropical climates a little to the south, not in search of food, nor in search of warmth, but in search of light, until at last some species acquired the habit of feeding at night, and were then able to live all the year round in a region subject to annually recurring periods of perpetual night. The comparatively small area of the Polar basin offered every facility for interbreeding, the condition of life remained the same throughout the shores of the Polar Sea, and neither isolation nor its usual concomitant differentiation took place. But the coming on of a Glacial Period changed all this.

The first important break in the continuity of the area of distribution of the Curlews must have been a wedge of ice coming down from the North Pole and extending along the mountains of Greenland, and isolating the American Curlews from the European ones on the Atlantic coasts. This was probably speedily followed by two enormous glaciers, one extending from the North Pole to the Rocky Mountains, and the other to the mountains of Eastern Siberia. This great central glacier thus separated the Curlews into two great colonies, an Atlantic Coast and a Pacific Coast colony. Later on, when the Arctic ice filled the Polar basin, the Curlews retreating before it must again have been compelled to split into two parties, one following the Pacific shores of Asia and the other the Pacific shores of America. In like manner the Atlantic colony naturally split into parties, but it had three instead of only two available routes of escape from the ice. One party, no doubt, found its way down Baffin's Bay, a second party followed the coast-line to Europe, whilst the third party, which followed the east coast of Greenland, finding its west coast already occupied by the Baffin's Bay Curlews, naturally took the shortest flight to land, and also reached Europe *viâ* Iceland and the Faroes. The theoretical distribution of the Curlews would, if this hypothesis of their origin be correct, resemble the following plan :—

POLAR BASIN.

(Ancestral Curlews.)

- New World and East Asia, from 140° E. to 40° W. (*Dark rumps.*)
  - C. Through Baffin's Bay to Labrador. (*Dark-rumped Whimbrels with barred quills*).
  - D. Through Behring Straits to East Siberia. (*Dark-rumped Whimbrels with plain quills.*)
  - E. Through Behring Strait to American shore of Pacific. (*Dark-rumped Curlews.*)
- Old World, from 40° W. to 140° E. (*Pale rumps.*)
  - A. Along the Samoyade Coast to Scandinavia. (*Pale-rumped Curlews.*)
  - B. Along East Greenland to Iceland and Scandinavia. (*Pale-rumped Whimbrels.*)

The reason for assigning the various routes to the subgeneric groups of species placed below them are as follows :—

Of the two species with dark rumps and plain primaries, one breeds in East Arctic Siberia and the other in Arctic America. As the latter is unknown on the Pacific Coast, it is most probable that it did not emigrate along the American shores of the Pacific, but is the result of a later emigration across Behring Straits to Arctic America.

Of the two species with dark rumps and uniformly striated crowns, one breeds in East Siberia and the other in sub-Arctic America. As the latter is more common on the Pacific coast of that continent than on the Atlantic, there is every reason to suppose that this group represents the Curlews which emigrated through Behring Straits along the American shores of the Pacific.

Neither of the two species with Whimbrel markings on the head, dark rumps, and barred wings, are found in the Old World, except that one of them is said to have occurred in Kamtschatka. They probably came down Baffin's Bay, as the Hudsonian Whimbrel has occurred in Greenland and once in Iceland. It is uncertain whether the Pacific Island Whimbrel breeds in Kamtschatka or in Alaska, but at all events it appears to be unacquainted with the coasts of China.

The pale-rumped Whimbrel is so common in Iceland and the Faroes that it is natural to suppose that it emigrated to the Arctic Regions of the Old World by way of those islands along the east coast of Greenland, where it is still found, and whence it has gradually spread to East Siberia. In the latter locality its rump is considerably streaked, leading to the supposition that when its range first touched that of its dark-rumped allies the species had not become quite so completely differentiated as they appear to be now, and that consequently some interbreeding took place between them, which has left its permanent mark on the eastern form of the Common Whimbrel.

The Pale-rumped Curlews, being represented by two species in Europe, one in Asia, and being entirely absent from America, doubtless escaped from the ice from the Kara Sea, along the European coast, and up some of the great rivers of Western Siberia.

The first group to be considered may be described as Pale-rumped Curlews. They may be diagnosed as having the rump white, or white more or less streaked with brown, but with no mesial line on the crown. They represent the Atlantic coast Curlews of the Old World, and consist of two species, one of which is perhaps divisible into two subspecies.

### 1. Numenius arquatus.

### 2. Numenius arquatus lineatus.

The range of the Common Curlew extends across Europe and Asia from the Atlantic to the Pacific: it only reaches the Arctic Circle in its western portion under the influence of the Gulf Stream, but to the south it includes the whole of the Ethiopian and Oriental Regions. To the colder portion of its range the Curlew is only a summer visitor. In the British Islands it is a resident, but in the Tropics it is only seen during winter.

Asiatic examples are slightly paler in colour, and have, as a rule, fewer streaks on the rump, and no bars or dark markings on the axillaries, which are snow-white. These characters are not very constant, and the two former completely intergrade, but, if the Eastern form be regarded as subspecifically distinct, it must bear the name of *Numenius arquatus lineatus*.

In the basin of the Mediterranean the Curlew is principally known as a spring and autumn visitor on migration, but in that district a closely-allied, though perfectly distinct, species is a resident. The fact that the range of the second species does not extend further east than the Ural Mountains confirms the theory that the Pale-rumped Curlews escaped from the Polar basin when the coming on of the Glacial Period drove them south, along the Atlantic shores of Europe. At the height of the Glacial Epoch they were probably isolated, in two colonies, one in West Africa and the other in the Valley of the Nile, for a period long enough to make them specifically distinct. When the Glacial Epoch had passed away, the West African colony spread over the basin of the Mediterranean, whilst the East African colony extended its summer range over the head of its ally east and west, until it finally extended from the Atlantic to the Pacific, whilst its winter range covered South Africa, and afterwards reached India, Burma, and the islands of the Malay Archipelago. The complete isolation of the African and Asian winter colonies of the Common Curlew produced variation in the species, but the uninterrupted area of their distribution in summer, combined with the much shorter period during which they have been isolated, have prevented the birds from these colonies from becoming completely differentiated.

### 3. NUMENIUS TENUIROSTRIS.

The Mediterranean Curlew is much smaller than its more southern ally, and has a bill relatively more slender. It combines the colours of the Common Curlew with the dimensions of the Hudsonian Whimbrel. A simple diagnosis of the Mediterranean Curlew is *axillaries pure white, tarsus less than three inches long:* no other species in the genus possesses both these characters.

It is a resident in the basin of the Mediterranean, occasionally breeding as far north as latitude 50°, especially in South-east Russia, where it is a migratory bird. It has not been recorded from any locality east of the Ural Mountains. In Africa its numbers are increased in winter by migrants from Europe, but it is unknown in Tropical Africa.

The second group comprises the Pale-rumped Whimbrels, which may be diagnosed as having the lower back and rump white, more or less streaked with brown, but always contrasting with the darker mantle, and the crown plain brown, with a pale mesial line. They represent the birds which left the Polar basin along the east coast of Greenland, and, finding the west coast already occupied, crossed over to Europe by Iceland and the Faroes. From their present arctic habits it seems probable that they never crossed the Mediterranean, but remained during the Glacial Period on the outskirts of the ice, which they followed on its retreat, until they finally spread over the Arctic Region of the Old World. Only one species is known having an eastern and a western form.

### 4. NUMENIUS PHÆOPUS.
### 5. NUMENIUS PHÆOPUS VARIEGATUS.

The Common Whimbrel breeds in the Arctic Regions of Europe and Asia from Iceland to Kamtschatka, wintering in the Ethiopian, Oriental, and Australian Regions. Eastern birds have always longitudinal streaks on the white rump, a character which is only found in the young of the western race, and then never to the same extent as in the adult of the eastern birds. In consequence of this peculiarity the eastern birds have been named *N. variegatus.*

The birds comprised in the third group have the rump nearly the same colour as the mantle and lower back, the crown uniform dark brown, with an obscure pale mesial line, and more or less distinct bars across the primaries and secondaries. They are supposed to represent the birds which emigrated down Baffin's Bay and the chains of American lakes. After the passing away of the Glacial Period they seem to have spread westwards to Behring Straits, and possibly to East Siberia. Two species are known.

### 6. Numenius tahitiensis.

The traces of pale bars on the inner webs of the primaries of the Pacific Island Whimbrel effectually prevent its being confused with the two smallest Whimbrels, though it agrees with them and differs from its nearest ally, the Hudsonian Whimbrel, in having the lower breast and belly buff instead of white.

The Pacific Island Whimbrel has occurred on the Sandwich Islands, the Society Islands, the Samoan Group, and on some other islands of the South Pacific Ocean, where it is probably only a winter visitor. A single example has been obtained in Alaska, and Taczanowski records it from Kamschatka, which are presumably the breeding-grounds of this species.

### 7. Numenius hudsonicus.

The Hudsonian Whimbrel is sufficiently distinguished from its dark-rumped allies by the whiteness of its lower breast and belly, and by the distinctness of the pale bars on the inner webs of its primaries.

It is confined to the Arctic Regions of the American continent during the breeding season from Alaska to Greenland, but in autumn it migrates southwards across the line, where it has been seen as far south as Patagonia.

The birds comprised in the fourth group may be called Plain-winged Whimbrels, and are easily distinguished from all their allies by the absence of bars on their primaries and secondaries. They appear to represent the birds which escaped from the Polar ice through Behring Straits, and afterwards followed the Siberian coast. Two well-defined species are known.

### 8. NUMENIUS MINOR.

The Least Whimbrel probably breeds somewhere on the coast of Eastern Siberia, as it is known to pass through Dauria and Japan on migration, and winter in Australia. It is very closely allied to the Eskimo Whimbrel, but differs from it in being slightly smaller, rather longer in the tarsus, and rather paler and less barred on the under parts. A more important distinction is to be found in the scales at the back of the tarsus, which are arranged in hexagonal reticulations in *N. borealis*, but in transverse plates or scutellations in *N. minor*.

### 9. NUMENIUS BOREALIS.

The Eskimo Curlew, having a distinct pale mesial line on the crown, ought to be called the Eskimo Whimbrel. It differs from all its congeners, except from its Siberian ally, in having scarcely any traces of pale bars on the inner webs of its primaries or secondaries. The differences between the two species have already been pointed out.

The Eskimo Whimbrel is essentially an Arctic bird, breeding only on the tundras of North America, above the limit of forest growth, from Behring Straits to Greenland. It winters in South America, where it has occurred as far south as Patagonia. It is not known on the Pacific Coast.

The fifth and last group consists of the Dark-rumped Curlews. They may be diagnosed as having the rump pale brown, streaked with dark brown, like the mantle and lower back; and the crown pale brown, each feather having a dark centre. They appear to represent the birds which passed through Behring Straits, and followed the American shore of the Pacific. Returning north, after the ice had disappeared, they spread eastward to the Atlantic, whilst a party crossed the Behring Sea into East Siberia, where they became differentiated into a closely allied, but now perfectly distinct, species.

### 10. NUMENIUS LONGIROSTRIS.

The American Curlew differs from the three European Curlews in two very conspicuous points. In the first place the rump, instead of being pure white with or without streaks, but in either case in strong contrast to the darker mantle, scarcely differs in colour from the rest of the upper parts; and, in the second place, the axillaries, instead of being white barred or unbarred with brown, are uniform deep buff. It may be distinguished from its Siberian ally by the absence of bars on the axillaries, or by its rich buff under parts unstreaked on the lower breast and belly. It breeds in Temperate North America, and winters in Mexico and Central America, but is a resident in many of the intervening districts.

### 11. NUMENIUS CYANOPUS.

The Australian Curlew scarcely differs from its American ally, either in dimensions or in the colour of its upper parts. It may, however, be easily distinguished by the colour of the under parts, which (including the axillaries) are nearly white, streaked and barred with brown.

Like its ally in the New World, it is a migratory bird, but the migrations of the Curlews on the Asiatic shores of the Pacific are on a very different scale to those of their cousins on the American shores of that ocean. The Australian Curlew breeds in South-eastern Siberia, from Lake Baikal to the mouth of the Amoor, passes along the coasts of Japan and China on migration, and crosses the line to winter in Australia.

One more point is worthy of consideration in connection with the geographical distribution of the genus *Numenius*. What light, if any, does its farthing candle cast upon the Zoological Regions of Sclater and Wallace? Of the five groups into which this genus appears to be naturally divided, four find one boundary in the Atlantic Ocean, two find their other boundary in the Valley of the Yenesay, and two at Behring Straits, whilst the boundaries of the fifth are not yet ascertained.

# FIELD NOTES FROM NORTHERN ICELAND.

By Henry H. Slater and Thomas Carter.

On June 22nd, 1885, we landed in the north-west of Iceland, and our guide with a cavalcade of ponies at once gallopped in to meet us. As the latter required a short rest, we fixed on midnight of the day following for a start, and next day took a walk to see the country. We noted a Raven's nest and a great many Ravens, several Long-tailed Ducks, more Pintails, still more Eiders, with Whimbrel, Golden Plover, Dunlin, Purple Sandpipers, Black Guillemots, Kittiwakes, and one immature Glaucous Gull.

At midnight, after a good deal of trouble in getting our effects properly packed into saddle-boxes, after the custom of the country, we started. It did not look like midnight, of course, in these high latitudes.

For three days we travelled almost incessantly, enjoying a great deal of magnificent scenery, but having a very lively time of it, what with the north wind and snow showers, rough roads (mere sheep-tracks), rivers to be forded, and marshes and snow fields to be crossed. We kept guns and binoculars ready, and picked up any eggs and skins we wanted, whenever we had a chance. Of the former we took, amongst others, Pintail and Red-necked Phalarope (the Grey Phalarope we never met with, though it has occurred); in skins all that is worthy of mention is a drake Harlequin which S. shot, and whose body made the *pièce de resistance* of a breakfast for us. Of this bird we saw a good number. We noted also a Falcon, a Heron (a rare occasional visitor to Iceland), Snow Buntings (the males of which looked at a distance like exaggerated cabbage butterflies; their song we duly appreciated; it is not unlike, but hardly equal to, that of the Lapp Bunting), some Geese, Pintail, Harlequin, Scaup, Teal, Common, and Golden-eye Ducks (S. is confident that he saw one male of the common Goldeneye, but *C. islandica* is, of course, the prevailing species of the country), Sclavonian Grebes, and Great Northern Divers. Besides these we saw, of course, White Wagtails, Wheatears, Meadow Pipits, Ravens, Dunlin, Ringed Plover, Arctic Terns, Golden Plover, and Whimbrel, which are to be seen in all parts of Iceland, and the last two of which the ornithological traveller before long gets almost weary of seeing and hearing.

Nothing need be added to this account of our first three days, except, perhaps, that we had a new experience in gastronomy. We had noticed at the port at which we landed that catching sea birds (principally Guillemots and Razorbills) was quite an industry, and we wondered what they did with them. We discovered that, like dried fish and sea-birds' eggs, they formed an important article of food, and were carried to the farms far inland, at one of which we tasted them. They were very dark-coloured, and full-flavoured, but tasted a good deal better than could have been expected, yet nearly as fishy as the codfish, which formed the second course.

To get to our first real working ground we had to cross a long sea loch, a range of hills, and a river. The loch was easily managed. We went across with our traps in a boat, the ponies went round some miles by a ford, and 10 o'clock p.m. on June 26th found us mounting and *en route* to cross the hills (1660 feet). We had a fair road to begin with, though the gradient was steep, but the road came to an end before long, and we went across bog, still ascending (N.B. In Iceland bogs do not require level ground for their existence). At last we came to a great snow slope, at about the same angle as an ordinary house-roof, up which we went in a slanting direction. We were not particularly anxious to travel on foot, as we had thigh boots and much clothing on, to say nothing of guns, cartridges, egg-boxes, and other impedimenta slung about us; but we had to dismount, as the ponies kept getting up to their middles in the snow (as did we occasionally). However, this was a trifle to the top, which we reached about 2 a.m. Here it was pretty flat, and the snow dreadfully slushy, the ponies (and ourselves) sinking in about every third step. The poor baggage ponies, whose loads could not be removed, were nearly knocked up, and kept helplessly lying down. It really looked like a bivouac where we were. However, in time we began to descend a little; the ground got firmer, and at last we were able to mount.

Crossing a patch of black boggy earth, S. happened to catch sight of a bird fluttering away from almost under a baggage pony's feet, so he jumped off at the spot and found a nest with four eggs. Dropping his gun-cover and sling to mark the spot, he slipped a cartridge into his gun, and followed the bird, and in a minute returned carrying a female Purple Sandpiper. The nest (which had a pony's footprint within two inches of it—a near shave!) was placed in a hollow of a tuft of *Dryas octopetala*, and was built—very substantially for a Wader's nest—of *Dryas* and *Salix lanata* leaves, grass, two white Ptarmigan feathers, and some down.

We continued to descend, enjoying the magnificent view, and crossed the rapid river at the bottom in a boat. The ponies, as usual, had to swim; a drove of them crossing a river is an extremely pretty sight. A short canter after this brought us at 4 a.m. to a Lutheran manse, at which we proposed to stop for a few days. Without any ceremony we promptly went to bed in the guest-room, S. on the sofa and C. in the recess bed.

We rose a little before 10, and after breakfast went to the neighbouring birch woods to collect. Of our doings at this place we need give only a short account.

Redwings were pretty plentiful in the birch woods. Numbers of fledged young were on the wing. C. found a nest on the ground among the birches with four perfectly fresh eggs. Headless Redwings and Golden Plovers, here and there, furnished evidence of the presence of birds of prey; the former killed, probably, by Merlins, the latter by Falcons.

We found the Rock Ptarmigan (*Lagopus rupestris*) fairly abundant here, and obtained both birds and eggs. It frequents the birch scrub, and is a true Ptarmigan, with a voice like a frog. It is excellent eating, and we made savoury stews of the bodies of those we skinned. Mr. Lock, in his 'Guide to Iceland,' considers the Icelandic Ptarmigan to be usually a hybrid between the Willow Grouse (*L. albus*) of N. Europe and N. America, and the Common Ptarmigan (*L. mutus*), and believes that pure birds of both species may be found also. With this opinion no one who has had the opportunity of examining critically a number of specimens will agree; the explanation of it may be found in the difference betweeen the redder summer and the greyer autumn plumage of *L. rupestris*. No modern ornithological writer, since the species were satisfactorily differentiated, has said anything in agreement with Mr. Lock's view, nor are any specimens known to exist in collections which bear it out. Mr.

Lock will do well to reconsider his verdict with a view to his next edition. See 'Ibis,' 1885, p. 376; 1886, p. 49.

The Mealy Redpoll we found abundant in the birch woods, and took two nests, with six and four eggs, and a boy brought in another. The nests were made of birch twigs, lined with grass, both interlaced with sheep's wool; a thick inner lining of white Ptarmigan feathers completed the structure. One nest was in the fork of a birch tree, about four feet from the ground; the other almost upon the ground, on a bank side. See 'Ibis,' 1886, pp. 46-7.

Of the Snow Bunting we obtained several nests. They are rather stupid birds, and are either excessively shy or absurdly tame. Their nests, which are placed in a narrow crevice in a rock, in some wild gill near the snow line, are large, loose, and untidy, like those of the Yellowhammer, and are made of moss and roots, lined thickly with grass, and again with Ptarmigan feathers. One nest we saw contained a large lump of cow's hair carelessly put in. The complement would seem to be six eggs, but a nest we took had only four, which were much incubated.

Ravens were not uncommon. The number of eggs of other birds which these and Richardson's Skuas dispose of, must be a very large proportion of those laid. There is no doubt that they especially keep in check the numbers of the Golden Plover and Whimbrel by devouring, throughout Iceland, thousands of the eggs of each. Doubtless, also, they do nearly as much towards thinning the Ptarmigan as man with his guns and snares. We were too late for Ravens' eggs, but from a nest in a lonely gorge we took young birds, almost fledged, which had been fed liberally on birds' eggs and crow-berries. (Has this circumstance any connection with the latter name?) We also heard young birds calling from their nests in the cliffs elsewhere.

The Northern Wren (*T. borealis*) was not unlikely to occur in this neighbourhood. We hunted and listened for it most carefully, but neither saw or heard it, nor found a nest, new or old; nor did our collectors bring any in, or lead us to suppose that they were likely to do so. In fact, we never met with anyone in northern Iceland who seemed to know more of it than the name. Four eggs of the Turnstone were brought in, which is all we saw of this bird in Iceland.

We shot three pairs of Richardson's Skua, of which only two birds were in the light plumage. None of the females seemed, from the state of their ovaries, to be within a month of laying. In one the oviduct had not commenced to curl. Yet we saw them invariably in pairs, and it was getting well into the short Icelandic summer. C., too, is sure that he was near eggs on one occasion—though he could not find them—from the behaviour of another pair of birds.

Having pretty well worked out the locality, our friend and host, the pastor, procured ponies for us, and we moved on some ten miles, to a very comfortable farmhouse near a lake. The pastor very kindly accompanied us, thinking that his slight knowledge of English might be of assistance to us in coming to an understanding with our new host. He rode like a Centaur on a very good pony of his own, and passed his time on the way in belabouring our two inferior beasts with a very persuasive implement of the dog-whip type. The first time he tried this, on S.'s pony, its rider, not expecting any such delicate attention, and being in a brown study, nearly went overboard, like the White Knight.

At this farm we stayed from July 3rd to July 9th. Our proceedings were rather marred by the arrival of a legal functionary, who was deputed by the Sheriff of the district to show us a copy of the law which forbids shooting in the close-season. We had previously got our guide to explain to the authorities that we were not intending to shoot for sport, or even for food, but only to authenticate eggs, and collect a few skins; therefore he desired our proceedings to be benignantly ignored. And if it had not been for a local farmer, who was prevented himself from shooting or snaring Ptarmigan, and did not see why these Englishmen should not be prevented too, we should probably never have been interfered with. As it was, we did not like to carry our guns for some days, which prevented us from bringing to England, thoroughly identified, what we still believe to be the eggs of the Sanderling. (See 'Ibis,' 1886, p. 50.) Harlequin Ducks were very abundant here, and we saw one flock of quite a dozen. They did not seem (from anatomical evidence) to be breeding generally, though we got some eggs. Their food consists of insects, mostly aquatic larvæ of some kind of Ephemera, which they hunt for in the gravelly margins of the rapidest rivers, just such places as anglers would look for May-fly "Creepers" in. We took our first Scaup's nest here with eight eggs. Later on we got tired of finding Scaups' nests. Longtail Ducks were not uncommon. Of Whimbrels' nests we found plenty. One is noteworthy; it contained only three eggs, much incubated; close beside the nest, which was on a tussock in a marsh, lay, in a small artificial heap, about a tablespoonful of small rounded pebbles, the size of peas, all of which must have been brought from the river, nearly a mile off. Perhaps they were a supply of accessory molars for the young birds when hatched.

Whimbrel rise wild from the nest; or, more probably, slip off the nest unnoticed as soon as you are anywhere near them, and run some distance before taking wing. The very broken nature of the ground, combined with the large number of other Whimbrels about, prevented our seeing them leave the nest, except on two occasions, on both of which we came upon them suddenly round a corner; from one nest C. saw the bird steal a few yards off, and S. walked on to a sitting bird, who flew off.

Redshanks were not uncommon, but we did not take their eggs, if they had laid any.

Snow Buntings were plentiful, and we obtained specimens of the young just able to fly.

There were three Great Northern Divers on the lake. At the special request of the farmer, who has a personal interest in the trout of the lake, we shot the two males, which weighed 10½ and 13 lbs. respectively; whereas two old and two fledgling Ravens weighed together only 11½ lbs., the adult male just 4 lbs. S. will not forget in a hurry walking back to the farm that evening with his fishing-rod over his shoulder in its bag, and a Diver tied to one end and 14 lbs. of trout to the other, and the way they swung about and drove him wild. Nor will either of the travellers forget in a hurry the difficulty they had in skinning the Divers in the Smithy that night till 2 a.m., the exertion required being almost equal to skinning a bullock; smashing the wing-bones with great force and a crowbar; chopping the neck in two at the back of the head with a spade. Two days later the widowed female, whom we spared, had found a new mate.

In addition to those mentioned above, we obtained here eggs of Teal, Wigeon, Longtailed Duck, Merganser, Great Northern Diver, Snipe, and Merlin. Four young Merlins in down were brought to us, and a couple of goose eggs, and we saw some Goosanders. S. did some fishing for the pot, or rather pan. Trout up to 2¼ lbs., redfleshed as Salmon, but much infested with entozoa; they took in preference a small crimson-bodied Grilse fly, with teal wing and golden pheasant tail. The Char, which rose pretty well to fly also, but did not run much over a pound in weight (they are not uncommonly up to 4lbs. in Iceland), preferred big black hackle of grilse size, gold-ribbed.

Our guide rejoined us on July 9th, and we proceeded some twenty-five miles further, over two very boggy and snowy ranges of hills, on which we found Ptarmigan fairly abundant. C. shot a hen bird which had evidently lost its nest through the recent snow, as it had a sitting spot on its breast. The surviving male kept almost within arm's length of him. That evening we found comfortable quarters at a farm by another lake-side, where we stayed several days.

Here we confined ourselves to egging, and never practised it on so wholesale a plan before. The first day we went out we did not keep a regular account of what we saw, supposing that we could carry the day's finds in our heads, as usual. So on our return to our quarters in the evening we estimated carefully the numbers of the different species of which we had found nests with eggs, viz.: Arctic Tern, 40; Sclavonian Grebe, 14; Merganser, 3; Barrow's Goldeneye, 7; Common Scoter, 1; Scaup, 160; Longtailed Duck, 30; Wigeon, 2; Red-necked Phalarope, 45; White Wagtail, 1.

There certainly appeared to be a good many birds about. Anything like the number of Red-necked Phalaropes we never saw before. In one spot, where we lay down for awhile at the lake's edge, in the heat of the day, they were running about all round us in the willow bushes and rushes, like mice, and often not more than a yard from us. And on the water they were perhaps more numerous still, and were dotted all over the lake in little parties, arranging their feathers, and playing little tricks on one another. We must have had a hundred individuals in sight at once. They certainly are amongst the most pretty and engaging of birds. One nest—probably a co-operative store—had seven eggs in it.

Scaup Ducks were more abundant there than any other bird; next to them the commonest duck was the Long-tail. We heard their beautiful bugle call all night and all day long.

White Wagtails here perched on the bushes like Whinchats, or perhaps like Ray's Wagtail at home.

Sclavonian Grebes were very abundant, and very tame. It is amusing to watch one of these birds swimming under water, as they do when leaving the nest. Their legs, being practically terminal instead of lateral members, give them, under water, somewhat the appearance of large frogs. We took a good number of their eggs, the reason being that there had been a storm of wind recently, and the waves had agitated the floating nests (made of a kind of *Myriophyllum*, and moored to the reeds) to such an extent as to upset many of the eggs into the water, and there they lay at the bottom. We retrieved all we could find; but the endosmosis having been the more vigorous action of the two, many were split.

Falcons and Ravens seemed to be pretty common. Besides seeing both individually, we observed numerous traces of their handiwork in the shape of remains of ducks and sucked egg-shells. Some of the ducks seemed to have been killed for amusement and practice; their heads were struck clean off, but no further notice taken of them.

We heard both Great Northern and Red-throated Divers about, and obtained eggs of each.

The next time we went out, over fresh ground, we began to keep a methodical account of all the nests we found with eggs. But after a short time we judged we had had enough of it. It seems almost a work of fiction, but here is the list as far as we got:—Scaup Duck, 305; Long-tail, 12; Scoter, 3; Wild Duck, 3; Merganser, 8; Wigeon, 2; Barrow's Goldeneye, 4; Sclavonian Grebe, 4; Phalarope, 13; Snipe, 1; White Wagtail, 1; Titlark, 1; Arctic Tern, 1.

The next day, on a small islet by the lake side, about fifteen yards square, we found twenty-one Arctic Terns' nests with eggs or young, ten Scaup with eggs, four Phalarope, five Grebe. The Arctic Terns haunted, or hunted, the hill sides near here, close to the ground. We did not shoot any, but we believed they were picking up spiders, which were plentiful.

The next morning, July 15th, we went to inspect a Barrow's

Goldeneye nest in a turf wall not far from our quarters. A few days previously we had approached her cautiously, hoping to catch her, as she flew off, in a net softly spread over the hole mouth. These elaborate preparations were wasted. Flying off was the last thing she thought of. She took no notice whatever of the net, and only hissed at us; when an arm was introduced she attacked it, eliciciting exclamations from its proprietor of "anything but joy." She was hauled out and examined; we remarked the almost impossibility of distinguishing the females of the two Goldeneyes, and she was then put back into her hole, into which she shuffled, and flopped down on her eggs as if nothing out of the common had happened. She had hatched that day, and we quietly impounded two of her chicks.

We had sent the baggage ponies off early. One being loaded almost entirely with eggs, it was necessary that they should travel leisurely. We followed at mid-day. We picked up, *en route*, young in down of Snipe, Whimbrel, and Redshank. We came suddenly, also, upon an old Ptarmigan with a numerous brood of young ones. S. was off his pony, and had caught a couple of them in a very few seconds. Not wanting any more, he nevertheless looked for the rest, of which there must have been eight or nine within a few yards of him, but not one could he find. The old bird, who had been feigning lameness or injury at first, vanished too, though she certainly had not flown away.

We travelled vigorously for some days, the ground having got much drier, and better going, collecting a few eggs and catching a few fine Trout here and there on our way, and reached at last Akureyri, the northern capital of Iceland, where we put up at Jensen's Hotel, which we can strongly recommend for kindly treatment, comfort, and moderate charges. Here we had a grand unpacking of our treasures, and were gratified to find that not one egg was broken. In fact, all were eventually unpacked in England without a single casualty. The following is our list of eggs:—

| | | | |
|---|---|---|---|
| White-tailed Eagle | 1 | White Wagtail | 5 |
| Iceland Falcon | 5 | Meadow Pipit | 16 |
| Merlin | 6 | Snow Bunting | 17 |
| Redwing | 5 | Mealy Redpole | 15 |
| Wheatear | 1 | Raven | 3 |

| | | | |
|---|---|---|---|
| Ptarmigan | 29 | Scoter | 20 |
| Golden Plover | 38 | Merganser | 27 |
| Ring Plover | 5 | Gannet | 2 |
| Turnstone | 4 | Arctic Tern | 54 |
| Phalarope | 65 | Kittiwake | 1 |
| Purple Sandpiper | 6 | Great Skua | 1 |
| Dunlin | 7 | Richardson's Skua | 2 |
| Sanderling (?) | 4 | Fulmar | 7 |
| Snipe | 7 | Little Auk | 2 |
| Whimbrel | 42 | Black Guillemot | 6 |
| Whooper | 2 | Common Guillemot | 12 |
| Goose (sp.) | 2 | Brünnich's Guillemot (?) | 1 |
| Teal | 5 | Razorbill | 4 |
| Wild Duck | 8 | Great Northern Diver | 5 |
| Wigeon | 20 | Red-throated Diver | 4 |
| Scaup | 19 | Sclavonian Grebe | 50 |
| Barrow's Goldeneye | 41 | Gadwall | 3 |
| Harlequin | 5 | Ducks (eggs with down brought in by collectors) | 70 |
| Long-tail | 21 | | |

Some of these, of course, we did not want, but they were brought in by our collectors. Some few were bought at Akureyri, from Herra Hensen, the apothek, or chemist, who had a Rook's skin, killed in the Faeroes, which he thought very valuable, and wondered that we did not care to buy it.

The Gadwall's eggs have only once previously been taken in Iceland. The Ducks' eggs, the last item in the above list, have mostly been determined by careful comparison.

Before leaving Akureyri, S. called upon the Sheriff to satisfy the requirements of the law, by being fined for shooting in the close season. As S. was not very proficient in Icelandic, nor the Sheriff in English, the conversation was carried on in French. "You know you have been breaking the law," quoth the Sheriff. "I am very sorry, but we must have specimens of your birds in all plumages," said S.; "there is a difference of opinion about the species of the Ptarmigan." "I am afraid I must fine you nevertheless; a formal complaint has been made to me, and the law states that 50 öre is the penalty for each bird killed in the close season. Now, I suppose you have killed six birds altogether, haven't you?" continued the Sheriff, who evidently sympathised with the defendant. "Why, yes," said S., managing to keep his countenance, "I should think we must have killed quite that number." "Then that settles it; three kroner, please," which were at once paid. "Now that this business is over, let me offer you a *petit verre*," the Sheriff concluded, "and we will go in and see the ladies."

They manage these matters infinitely better than we do. No frowning documents to make your soul ooze out of the tips of your fingers; no confinement in cells, or docks, or other indignities before a jeering mob.

We experienced at Akureyri another new sensation, the memory of which will cling to us as long as life does. Every visitor to Akureyri, whose experiences are printed, has mentioned it, and we cannot forbear to do the same. The sensation in question was the smell of the shark-liver oil factory at Oddeyri. Imagine the odour of a dissecting room at its worst, and combine with it the effluvium from a third-rate fish shop at midsummer; the result will be gales of Araby the Blest compared with the perfume of the Oddeyri factory!

It will be observed that we have omitted to state localities throughout; the omission is intentional, lest collectors less scrupulous than we were should be tempted to more reckless destruction of bird life than we were guilty of.

In conclusion we must mention with gratitude the great kindness we experienced in Iceland from all but one person. Especially, too, must we commend our guide, Herra Stephen Stephensson, of Akureyri, whom we found most energetic and obliging. He is a government official and a gentleman, but is glad to increase his income by such aid as we required. We can confidently recommend him as an excellent guide and a pleasant companion.

---

# NOTES ON THE VERTEBRATE ANIMALS OF LEICESTERSHIRE.

By Montagu Browne, F.Z.S.
Curator, Town Museum, Leicester.

(Continued from p. 24).

## Order Striges.—Family Strigidæ.

*Strix flammea*, Linn. Barn Owl, White Owl.—Resident and generally distributed. This bird has more than once visited the portico of the Museum at night. Twice I have found its chalky excreta splashed on the steps, and once I found a pellet containing the skull of a Sparrow. In the spring of 1885, I found that it frequented Aylestone Church. In conversation with my friend the late Mr. Widdowson, he told me of an extraordinary parasite he constantly found during the winter months in the legs of this bird, and I asked him to send me the next specimen, which he did on January 7th, 1884, writing, "If you take the skin off the legs, you will find what I take to be the nidus of some insect, and I believe you would find the same in one-half the number killed at this season of the year, but at no other time, and in no other species." On examination, I found, on the tibia just above the joint, under the skin, in the sub-cutaneous tissues, a collection of minute seed-like objects, which, under the 1-inch objective, resolved themselves into thousands of whitish yellow acari. Under a higher power, I made out their possession of eight semi-spinous jointed legs, around an oval, sub-hyaline body, but I could not (even under the $\frac{1}{4}$-inch, our highest power) make out anything else but one or two short transverse lines and a slit nearly in the centre of the body. From the drawing I made of one of them, I infer their relation to the itch insect.

### Family Asionidæ.

*Asio otus*, Linn. Long-eared Owl (Horned Owl). — Resident, but rarer than the Short-eared Owl, and breeding occasionally. It is included by Potter amongst the birds of Charnwood Forest. It makes no nest of its own, but takes possession of the deserted nest of a Magpie or Crow. Mr. Macaulay presented one to the Museum which had been caught in a rat trap at Saddington Reservoir, October 26th, 1882. I received one from Gopsall in 1880, and another—a female—with well-developed eggs, from Elkington, shot in the district, on March 24th, 1884. I also received a male from Widdowson, shot at Melton on April 30th, 1885. On May 18th, 1882, I went over to Ashlands to see four young ones, taken from the deserted nest of a Carrion Crow on the 13th. The birds were feeding well, and were very pretty, being covered with greyish white down, freckled with duskier markings, and with distinct ear-tufts about half-an-inch in length, also grey, and barred; their irides were pale yellow. Two still survive. Mr. Davenport, who took them, described the ears of the old bird as "standing up above the nest like the ears of a fox."

*Asio brachyotus*, Forster. Short-eared Owl (Woodcock Owl). —A winter migrant, generally distributed, but not common. Potter, in his 'History of Charnwood Forest,' mentions it as occurring "in the wilder parts of the moors, and in turnip fields;" and Ingram writes, "occurs amongst gorse bushes and low shrubs, generally two or three together." Widdowson, from whom I received several specimens, considered them fairly common near Melton. One procured at Leicester Abbey on September 20th, 1882, by Mr. Warner's keeper, was presented to the Museum.

*Syrnium aluco*, Linn. Tawny Owl (Wood Owl, Brown Owl). —Resident, but not very common. I received two nestlings (a male and female by dissection) taken at Bradgate, May 15th, 1885, and an adult pair procured at Newtown Linford, on December 19th, 1885. The gizzard of the male contained the beak of a Sparrow or Greenfinch, a few feathers and bones, and a quantity of fur of mice, including a lower jaw of the Red Bank-Vole. The gizzard of the female contained a little fur and some remains of the Red Bank-Vole, a quantity of feathers, and two beaks of sparrows.

### Order Accipitres.—Family Falconidæ.

*Circus æruginosus*, Linn. Marsh Harrier.—In Potter's 'History of Charnwood Forest' it is stated that one was killed and another seen at Buddon Wood, in 1841, by the keeper to Mr. Butler Danvers. Harley says, "The late Mr. Adams told me that he used to take it in his traps frequently before 1811, when Charnwood Forest was unenclosed, and the species used to be met with more recently about the wild gorse-land lying above Whitwick, called the 'waste,' from whence I have seen specimens brought."

*Circus cyaneus*, Linn. Hen Harrier (Blue Hawk).—Potter records one as seen at Thringstone in 1841, and Harley states, on the authority of Adams the keeper, that it used to nest in Charnwood Forest regularly before the enclosure, as also in other parts of the county. He adds that, "some years ago I winged a partridge in barley stubble, and, on the dog attempting to retrieve it, the 'Blue Hawk' carried it away, notwithstanding the discharge of the gun and the shouts of the bystanders."

*Buteo vulgaris*, Leach. Buzzard.—According to Potter, "two were shot near Charnwood Heath in 1839, one of which came into the possession of Thomas Gisborne, Esq., the other of Kirkby Fenton, Esq." At the commencement of the present century, says Harley, "it used to nest in some lofty firs (from whence he took its eggs) in the lower parts of the Outwoods, Loughborough, near to the brook. It used also to nest at Bardon, Belvoir, Donnington, Gopsall, Martenshaw, and at Oakley and Piper Woods." One was killed in Dalby Wood in 1879, so the late Mr. Widdowson informed me.

*Archibuteo lagopus*, Gmelin. Rough-legged Buzzard.—A winter visitant. In the autumn of the year 1839, and winter of 1839-40, no less than thirty were procured in this county and in Nottinghamshire. Of these, five were captured in the Forest of Charnwood, and three others in Bradgate Park. One of these, a female, shot on November 12th, 1839, was examined. Its weight was 2 lbs. 4 oz., 23 inches in length, and 54 inches spread of wings. In its crop were found rabbits' fur, pieces of flesh, small bones, and the feet of a field-mouse. In the stomach was rabbits' fur and small bones, mixed with animal matter. A male, captured in the grounds at Bradgate two days afterwards, was found, on examination, to contain some elytra of beetles. One was killed near Ashby-de-la-Zouch, February, 1880. One sent from Bradgate Park, November 15th, 1839, is now in the Leicester Museum. A pair in the Bickley Collection, Leicester Museum, was killed at Stathern Hills, so Widdowson stated.

*Aquila chrysaëtus*, Linn. Golden Eagle.—No reliable record of the appearance of this bird in the county exists, although Potter, in his 'History of Charnwood Forest,' records a specimen "killed in Bradgate Park, in April, 1841, and in the possession of the Earl of Stamford, at Dunham Massey." This, however, proved to be a White-tailed Eagle, as noted by Harley.

*Haliaëtus albicilla*, Linn. White-tailed Eagle.—Potter, in his 'History of Charnwood Forest,' states that a specimen was killed at Swannington by Mr. William Burton, the head and wings of which were preserved, and these he saw. Harley mentions one captured in Bradgate Park on 26th of December, 1840, which he shortly after examined. It measured 87 inches in stretch of wings, and 37 inches in length. The wings and tail were much abraded, suggesting recent captivity; but, on applying to Yarrell for his opinion, he replied that such marks were not unusual. The "Golden Eagle" included in Mr. Babington's 'List of Birds,' printed in Potter's work on the Forest of Charnwood, was wrongly identified, and proved to be an immature White-tailed Eagle. The specimen in question is in the possession of Lord Stamford. Widdowson reports one taken at Stapleford Park. In the 'Midland Naturalist' for March, 1882 (p. 62), Mr. Macaulay mentions one he saw, which was shot by Sir G. Beaumont's keeper at Coleorton, in Nov., 1879. It was seen some days before it was killed feeding on a rabbit. He adds that in the autumn of 1881 Sir G. Beaumont saw an Eagle soaring over his grounds, but at too great a distance to distinguish the species.

*Astur palumbarius* (Linn.). Goshawk.—Harley says :—"The Goshawk must be regarded as exceedingly rare. I have known it trapped and shot at Oakley and Gopsall Woods, and recollect seeing one many years ago which had been shot at Oakley Wood by a gamekeeper named Monk." In the 'Midland Naturalist,' 1882, p. 62, Macaulay writes, "One was seen in Allexton Wood in 1881"; but his informant, Mr. Davenport, replying to my enquiries, stated that, so far as he could recollect, the taxidermist at Billesdon (Potter by name) had in his shop for six or seven years (if not more) a bird shot by a Mr. Brewster (who once lived at Allexton Hall), at Allexton; this bird was said to be a Goshawk. Mr. Potter, on being written to, confirmed this.

*Accipiter nisus* (Linn.). Sparrowhawk. — Resident and generally distributed. Breeding so close to the town of Leicester as Knighton, where I have found the nest and eggs. I purchased, from Elkington, an adult male, shot near Ansty, December 12th, 1885, whilst attempting to strike the decoy Linnet of a birdcatcher. Mr. Davenport, who found a Sparrowhawk nesting in Skeffington Wood in March, 1884, wrote word that "she laid her first egg on April 30th, and continued laying in the same nest, by fits and starts, until the first week in June. He took fourteen eggs in all from this nest! This bird laid forty-five eggs in five years: fourteen in 1879, four in 1880, nine in 1881, four in 1882 (in 1883 I was in Cornwall), and fourteen in 1884.

All the forty-five eggs were very similar, and the five nests were all within a radius of a hundred yards. In 1885 she disappeared; but at Keythorpe, from a nest in a fir-plantation, I took fifteen eggs consecutively. After the fifteenth egg I molested the bird no more. For three consecutive years she adapted an old pigeon's nest to her use in one of the trees."

*Milvus ictinus*, Savigny. Kite.—Potter, in his 'History of Charnwood Forest,' says that "one was shot from a window at Longcliff in the act of watching some young pigeons"; and Harley remarks that when a boy it was no unusual sight to observe a Kite passing overhead to the forest of Charnwood, and its bleak lone hills. It used to frequent some of the more retired woods, as, for example, Groby, Martenshaw, and those of the northern division of the county. It occurred at Belvoir Wood in the autumn of 1850, but there remains at the present day no trace of it, except in the name "Kite Hill," a former haunt. Widdowson had received three or four during the last twenty-five years.

*Pernis apivorus* (Linn.). Honey Buzzard.—A rare summer visitant. An immature example was shot by a keeper at Martenshaw Wood on Oct. 28th, 1841. It was flushed from the ground, where it was feeding on the larvæ of the common wasp. Its cry, on being surprised, resembled that emitted by the Barn Owl. A second example was shot shortly afterwards in Lea Wood, near Ulverscroft, and, for want of a little knowledge of its rarity and value, was consigned to the ferrets. I examined a dark specimen in the possession of the late Mr. Widdowson, which was procured near Twyford Mill in September, 1881, by a Mr. Greasley, who for several mornings had seen it about, and had attempted to shoot it, when, after losing sight of it for two days, he was attracted to the spot, where it lay dead, by a crowd of little birds surrounding it. Apparently it had been killed by flying against the telegraph-wires. Mr. Ingram writes that one was shot by Mr. Lovett near Belvoir. I saw, at Noseley Hall, a specimen in ordinary dark plumage, shot by Sir Arthur Hazlerigg, some years ago. I purchased a female specimen (in the immature brown plumage), shot at Theddingworth on the 18th June, 1879, by Mr. W. Hart, jun. The weight was not taken, the bird being extremely thin. Length, 23 in. Culmen, 1·5 in.; wing, carpus to tip, 16 in.; tarsus (of a dull orange yellow), 2 in.; irides, golden yellow. The crop, gizzard, and intestines were filled with insects, mixed with vegetable fibre, probably grass-roots, one or two blades of grass, and a leaf, no doubt swallowed when tearing out a wild bee's nest. Careful washing produced small bees (*Nomada* sp. ?), about one hundred ichneumon flies, some *Syrphidæ*, one soldier beetle (*Telephorus* sp.), and parts of other beetles; one hundred or more larvæ, or parts of larvæ, of *Geometridæ*, of three species, the greater number being probably those of *H. progemmaria*. This specimen is now in the possession of Mr. R. W. Chase, of Edgbaston, Birmingham. The Leicester Museum possesses an immature male specimen (in light snuff-coloured plumage), procured from the late Mr. Widdowson, to whom it was sent alive on being taken at Croxton Park on June 13th or 14th, 1884. Mr. Widdowson wrote concerning it:—"I have examined it, and cannot find any wounds. It is very amiable, allowing me to stroke its head or back without showing any temper or fear. It is now two or three days since capture, and it has not eaten anything at present." After it came into my possession I kept it alive up to the end of June, but, although exceedingly tame, it would not touch anything, nor could we force anything down its throat, not even water. After it died we found it had received injury to the walls of the abdomen, evidently caused by shot. The colour of its irides was golden yellow; legs and toes reddish yellow.

*Falco peregrinus*, Tunstall. Peregrine Falcon.—Has occurred near the Loughborough outwoods, at Gopsall, at Groby, at Bradgate, in Oakley and Piper Woods, and at Stapleford Park. Turner reports a female, shot by Mr. Berkeley at the North Bridge some years since, while chasing pigeons. In October, 1885, I purchased a specimen for the Museum, an immature female said to have been shot some eight years previously at Woodgate, near the North Bridge, out of some high poplar trees; and in May, 1885, Mr. Owen West presented to the Leicester Museum an old female Peregrine, shot by himself at Tur Langton, about five years previously.

*Falco subbuteo*, Linn. Hobby.—An uncommon summer visitant, and has bred in the county. Potter records one specimen as having occurred near Thringstone. According to Harley, "It usually breeds in the deserted nest of a Carrion Crow or Magpie, which it repairs. In the summer of 1840 a pair of Hobbies took up their abode in the deserted nest of a Magpie on a large elm, standing in a hedgerow within the lordship of Houghton. Some of the young birds were taken from the nest and made pets of by a neighbouring gentleman, who kept them for some time. Chaplin, of Groby, in the month of September, 1841, met with this species in Martenshaw Wood. The parent birds were destroyed, and the young ones taken away." In addition to the localities named the Hobby has been met with at Coleorton, in 1874; at Gumley Wood, on several occasions; at Rothley, in March, 1880; and at Stockerston Wood, where two were shot in the summer of 1881. One was chasing the other, and both were killed by one discharge, and hung on a tree with other vermin. Some years ago I purchased a male, killed at Hinckley, and another at Sir Beaumont Dixie's sale in September last, which was shot at Bosworth Park. Both are now in the Leicester Museum. The late Mr. Widdowson reported three during 1880, and wrote that it had bred at Burleigh Park, Oakham, since 1880. Elkington has received several within the past twenty years, reporting one, a male, caught by nets in 1882.

*Falco æsalon*, Tunstall. Merlin. — An uncommon winter visitant. According to Potter it has occurred near Sheepshed, and Harley states that it comes to our woodlands in autumn, remaining during the winter months only. Mr. J. B. Ellis presented to the Museum, on Jan. 30th, 1882, an adult female Merlin in the flesh, shot at Bardon Hill, and has informed me of two others since then, one of which was shot. Ingram writes, "Taken occasionally at Belvoir." Widdowson reports several during the last few years. Elkington received a female shot at Dunton Bassett on Dec. 11th, 1885.

*Tinnunculus vespertinus* (Linn.). Red-footed Falcon.—The MS. Donation Book, Leicester Town Museum, records the presentation, by the Literary and Philosophical Society, on Feb. 22nd, 1866, of an "Orange-legged Hobby, shot near the Machine House, Belgrave Road, July 1st, 1865," with a note in the margin, "first recorded specimen in this county." It is still in the Museum, but, from certain facts which have come to my knowledge, I doubt its authenticity.

*Tinnunculus alaudarius* (Gmelin). Kestrel.—Resident and commonly distributed. Macaulay considers that since the passing of the Wild Birds Protection Act this species has become commoner, which tallies with my own observation. In the stomachs of Kestrels I have dissected I have never found anything but remains of beetles and mice. Davenport writes:—"My experience of Kestrels is that they are more sensitive than the Sparrowhawk, forsaking their nest if tampered with. If I find a nest with three eggs, I take one only, or it is almost a certainty the bird will not only forsake, but will cast away the remaining eggs as well. I found a white egg at Billesdon Coplow in May, 1882." Mr. Johnson, keeper at Laughton Lodge, Rugby, sent me, in May, 1885, an old Carrion Crow's nest, in which a Kestrel had laid five eggs, light-coloured and very handsome. I weighed two of them when quite fresh; one was a little more than ¾ oz., the other exactly ¾ oz.

*Pandion haliaëtus* (Linn.). Osprey.—A rare visitant. According to Potter, "One shot by the Marquis of Hastings at Donnington Park, October, 1841, is now in his lordship's collection. Harley says one was shot in Sileby field in 1840, while sitting on the shafts of an agricultural roller. A fourth example was obtained by Mr. Adams at Groby Pool; and in 1841, during the autumnal months, Sir Oswald Mosley recorded the capture of a fifth at Overseal. The late Mr. R. Widdowson informed me of one killed some years ago, of which he had forgotten the particulars, and of another, a male, shot by Mr. George Hack, at Edmondthorpe, on Nov. 13th, 1858, which was 5 ft. 4 in. in spread of wing. In the 'Midland Naturalist' for March, 1882, p. 62, one shot some years since at Noseley is stated to be in the possession of Sir A. Hazlerigg. I received one, shot at the Reservoir, Bradgate Park, on Sept. 18th, 1879, by Mr. C. Overton, keeper to Lord Stamford. It was a fine female specimen: weight, 4 lbs. 2 oz.; extreme length, 23 in.; spread of wings, 5 ft. 4 in.; tail, 9 in.; carpus, to tip of third primary, 18 in.; culmen, 1·5 in.; tibia, 5 in.; tarsus, 2·5 in.; middle toe with claw, 2·5 in. Mr. Overton, who had several opportunities of observing it feed, saw it take several fish with hardly a miss. This specimen was mounted for the late Earl of Stamford and Warrington, and is, I believe, now at Enville.

(To be continued.)

# ORNITHOLOGICAL NOTES FROM NORTH NORFOLK.

By J. H. Gurney, Jun.

The ornithological events which happened in the northern part of the county of Norfolk, during the year 1885, were neither numerous nor important; but of such as came under my notice the following are selected as the only ones of especial interest. The autumnal migration, which in 1884 added three new species of birds to the Norfolk list, in 1885 did nothing for us, so far as Blakenney and Cley are concerned, where the Messrs. Power kept their usual sharp look-out for nearly a month, and where I joined them several times in fruitless search; but to a student of migration the absence of species is perhaps as suggestive as their occurrence, inasmuch as it may help to an understanding of what brings accidental visitants to our coast, if coupled with daily notes of the direction and velocity of the wind.

Bearded Titmouse, *Calamophilus biarmicus*.—The tongue and inside of palate in a nest full of young Bearded Tits, examined at Potter Heigham not long ago, presented a most singular and really very pretty appearance. It consisted of rows of black and white dots, regular and raised, upon a red ground. I should like to know if this has ever been noticed. In another nest, found the same day, which contained eggs, the male was sitting upon them, as was plainly visible to myself and two other ornithologists. Mr. J. Young has observed this same habit in confinement (*cf.* Norf. & Norw. Trans. iii. p. 521).

Great Grey Shrike, *Lanius excubitor*.—A Grey Shrike was shot at Beeston Regis, on March 23rd, as it was eating a Hedge Sparrow; it was close to a house, and was either very tame or very hungry, for it allowed itself to be approached within two yards.

Black-bellied Dipper, *Cinclus melanogaster*.—On September 2nd and again on the 5th a Dipper was seen at Cley. I do not recollect that one has been recorded in Norfolk as early as August before, November being the month in which they have generally occurred.

Blue-throated Warbler, *Erithacus suecica*.—The Blue-throats, which were so abundant last year (Norw. Nat. Tr. iv. 40), evidently passed our coast without stopping. The only one was shot on Horsey sand-hills, by Mr. G. Hunt, on September 25th. From September 8th to September 11th we had the wind N. or N.N.W.; after that we had a good deal of S. and S.W. wind until the 20th, when it got into the N.W. again and remained so.

Goldfinch, *Carduelis elegans.*—About twenty Goldfinches were observed on an alder at Hempstead, Dec. 5th; and thirty or forty more, too far off to be identified with certainty, are believed to have been seen. It is commoner with us than it used to be.

Mealy Redpoll, *Linota linaria.*—On October 18th a Redpoll, which is apparently a Mealy Redpoll, settled on board the 'Leman and Ower' light-vessel and died, no doubt from exhaustion. Wind N.N.E.

Tree Pipit, *Anthus arboreus.*—On November 10th—a late date—a Tree Pipit killed itself on the 'Leman and Ower' light-vessel. Wind S.E.

Wood Sandpiper, *Totanus glareola.*—On August 12th a Wood Sandpiper and two Green Sandpipers were shot at Hempstead.

Black-tailed Godwit, *Limosa melanura.*—On September 15th a Black-tailed Godwit was shot at Blakenny.

Long-tailed Duck, *Anas glacialis.*—An adult male in *full breeding plumage* was caught by some boys in a dyke on Acle Marshes, about June 14th. This is the second time it has occurred in Norfolk in this plumage; the other specimen was shot in the same district several years ago. Its occurrence in winter is of course much less remarkable.

Scoter, *Œdemia nigra.*—On July 22nd some Scoters were observed at Cromer. Their occurrence in summer is not very unusual.

Eider Duck, *Somateria mollissima.*—On August 5th I saw a large bird swimming in the surf at Cley, which was apparently an Eider Duck. It had been seen at the same place every day for a fortnight, but (of course) took its departure on the very morning I went off to shoot it. On December 30th I was told a pair were seen, and the female shot. Old males are extremely rare on this coast, but females are not uncommon.

Pink-footed Goose, *Anser brachyrhynchus.*—Two Pink-footed Geese were shot at Blakenny on December 30th. I never positively identified this species of Goose there before, but Major Feilden tells me they are often taken in nets at Wells, and last year two were caught at sea off Cromer, having very likely been wounded; and, being turned out on a private pond, lived very happily until they escaped.

---

## NOTES AND OBSERVATIONS ON BRITISH STALK-EYED CRUSTACEA.

By Edward Lovett.

(Continued from vol. ix., p. 469.)

### *Crangon fasciatus.*

This and the five following species of the genus *Crangon* are so comparatively rare and so easily mistaken, when seen casually, for the young of the common Shrimp, that there is but little to record of their habits and life history. My own series of the genus is but small, so that I refer for a brief description to Bell's standard work. Of this series he says it "considerably resembles the common shrimp in its general aspect; but, besides being very much smaller, it differs from it in many particulars. The peduncle of the internal antennæ is proportionally much shorter; the spines on the branchial region of the carapace obsolete. The first pair of feet are robust, the movable finger much curved; the second pair of feet shorter than the first, and the third extremely small, minutely didactyle; the third pair very slender. The abdomen is as large as the thorax for rather more than half its length, and then contracts somewhat suddenly, by which it may be at once distinguished from young individuals of the other species. There is also a remarkable brown band across the fourth segment of the abdomen, and a spot or two of the same colour on the sides."

"Total length six-tenths of an inch."

It was evidently a rarity to Bell, who records that he found three specimens among some small Crustacea sent him from Salcombe Bay, Devonshire. Since then, however, it has been recorded from several localities, namely, the Farne Islands, in 1863; the Shetland Islands in 1868; Galway, Arran, where it is recorded as rare; Belfast; the Northumberland coast; Cornwall, where it is said to be found occasionally on stony ground; Dublin, Sandy Cove, where it is recorded as spawning in May; and it is also recorded from the Adriatic Sea.

It has been surmised that this species and *Crangon sculptus* are identical with *C. boreas* of Phipps, and, from my experience, I should say that not only was this possible but that many of these smaller forms might actually represent a less number of species than they do at present. They do not occur in sufficient numbers, nor with sufficiently marked characteristics of habitat, &c., to be regarded as good species; for differences of locality, time of year, and other circumstances, often result in features of a more or less varied type. I have known differences of opinion to exist regarding the identity of larger species than these, and I think it more than possible that the genus *Crangon* does not embrace so many species in reality as we at present credit it with.

### *Crangon Pattersonii.*

A species under this name has been recorded in the 'Natural History Review' as having been found at Belfast.

### *Crangon spinosus.*

This species differs from the preceding ones chiefly in having five rows of spines on the thorax, pointed forwards; in other respects it much resembles other Crangons. Bell regards it as rare, but of rather wide distribution; but also states that Leach speaks only of two specimens, one from Plymouth and the other from Falmouth. He also records it from Shetland and Ireland.

It is elsewhere recorded: from Shetland as common; Galway as rare; Belfast, Northumberland, and Durham coasts; South Devon, frequent. It has been also specially recorded from off Tynemouth and Berwick, at which latter place a specimen 2¼ inches in length is said to have been taken; this is certainly large. It is also said to have been taken in the Adriatic Sea.

### *Crangon sculptus.*

This species is described as differing from the preceding one "in the less regularly longitudinal direction of the lateral raised lines on the carapace, the less pointed and fewer teeth of this part, the longer proportion of the antennæ-scale with relation to the peduncle, and, strikingly, in the sculpture of the abdominal segments, and the extent and sharpness of the carina on this part." Bell, however, states that he had only two specimens. It is also said to have occurred at Dublin, Galway, Belfast, the Hebrides, South Devon, and the Adriatic Sea.

### *Crangon trispinosus.*

Bell describes this species from Mr. Hailstone's description, admitting that he himself had never seen a specimen. Its characteristic features are there stated to be three spinesonly on the thorax, one in the middle and one on each side of it; the colour being less clouded than that of the common shrimp, and with a sprinkling of golden blots. They were called by the men who caught them "pug shrimps."

This species is elsewhere recorded from Shetland, Holy Island Harbour, Dublin, and South Devon.

### *Crangon bispinosus.*

Bell's description of this species seems to be a somewhat hesitating one, as it is a description by Mr. Hailstone of a single specimen which was found at Hastings in a heap of *Filipora filigrana*. It is stated to have some points of resemblance to *C sculptus*, except as regards size, which, however, does not count for anything, considering only one specimen was then seen. It, however, has a slightly different arrangement of spines on the thorax, having two prominent ones and a row of blunt notches; this would appear to be its specific feature, if it be indeed a permanent one. There have been, however, several records of a species under this name since, so the form, whether a species or variety, has been more established.

Amongst the localities from which it is recorded are Shetland (where the record states "locally common"), Galway, Isle of Arran (rare), Durham and Northumberland coasts, and the Hebrides. Two specimens of this "rare species" are also stated to have been dredged in forty fathoms, forty to fifty miles off Tynemouth. *C. bispinosus* is said to be *C. nanus* of Kröyer.

### *Crangon serratus.*

A species under this name has been described, and also recorded, from the Shetlands and Hebrides.

In these short notes on the genus *Crangon* I have, I fear, expressed myself somewhat sceptically as to the number of species recognised, described and recorded. This I may have no right to do, but, considering the paucity of the specimens (in some cases only one) from which species have been evolved, and considering also the remarkable effects, on variation of colour, size, markings, and even shape, produced by locality, climate, geological and zoological influences, even amongst larger and more defined forms than these, I am inclined to recognise the full claim of such important and powerful causes in producing varieties. I hope, on the conclusion of these chapters, to say a few words on such varieties among the stalk-eyed Crustacea, in which I shall refer to some of these points. Of course, with regard to the genus Crangon, I have, as already stated, very few species, or even specimens of the rarer ones, but from all records this seems to be a somewhat general feature. Most of my other genera are represented by large series of each species, and in one case where three species of one genus are described by early authors from the British seas, I have so many intermediate varieties that it is really hard to say where one species leaves off and the next commences.

I find the proper method to adopt in regard to a critical or obscure species is to procure (when possible) specimens of various ages, and therefore moultings, and sizes; some changes do most certainly take place during moultings, even after the animal has reached the final stage of its existence.

With but one or two exceptions, the several species of the above genus are described as being very much smaller than the common Shrimp, and I have myself noticed that not only does the common Shrimp vary considerably in different localities, but that it is among the immature specimens that this is most noticeable.

### *Alpheus ruber.*

This beautiful and exceedingly rare Crustacean has lately been discovered at its proper home in one of the Channel Islands by an indefatigable naturalist, Mr. J. Sinel, of Jersey, from whom I have received two of the finest specimens ever seen as regards colour, condition, and size. I am also indebted to Mr. Sinel for some valuable notes on its power of producing sound, as well as on its habits so far as he has been able to observe them.

In describing this species as *Alpheus ruber*, I may be considered in error by those who have examined specimens of this rare genus from the Mediterranean or elsewhere. I believe that two species have been described as British, namely *A. ruber* and *A. affinis* or *megacheles,* but, for want of opportunity to compare such specimens as have from time to time been found, I am unable to express an opinion on their distinctive features.

As three specimens in my possession do not differ materially from each other, or from Bell's figure and description of *Alpheus ruber,* I am content to consider them of this species.

With a rare form like this it is difficult to form a decided opinion when so few collections of Crustacea contain any representative of this genus; when the literature of the subject contains perhaps fewer references; and when such records as do exist are not collected in one book, but scattered through such publications as 'The Annals and Magazine of Natural History,' the Reports of the British Association, the 'Natural History Review,' and the various Reports of Scientific and Natural History Societies.

As I have said, the only species of the genus described by Bell is *Alpheus ruber.* He says that the genus is chiefly confined to hot climates, one species only having been found in Britain, and gives the generic characters as follows:—External antennæ placed beneath, and to the outer side of the inner; the lamellar palp of moderate size, somewhat slender and pointed. Internal antennæ terminating in two filaments, of which the superior is rather thicker than the inferior; the basal articulation short, and furnished with a spiniform scale. External pedipalps more or less slender and elongated; terminal joint broad, and somewhat foliaceous. First pair of legs didactyle, robust; one much larger than the other, and very differently formed; second pair also didactyle, very slender; the carpus multiarticulate; the remaining pairs slender, monodactyle. Carapace extending forwards so as to form an arched covering to the eyes. Rostrum small or wanting. Abdomen long and much developed.

His description of the species is from two specimens obtained by Mr. Cocks, of Falmouth, who procured them from the stomachs of codfish, which resulted consequently in their being much damaged. He described the arm as being about three times as long as it is broad, and as having a small spine situated about one-third from the extremity, the wrist being short. The larger hand, which is on the left side, is short, the sides nearly parallel, flattened, the upper margin with two carinæ; the outer side also with two carinæ, the inner surface rounded.

These being the chief specific characters as alluded to, I will compare them with those of my own specimens. In the two just received from the Channel Islands the spine on the arm, referred to above, is wanting; but the angle of the arm nearest the wrist is in the form of a spine, and from it the margin of the arm slopes down to the point at which the wrist is articulated. The third and smaller specimen, which, I believe, came from the same locality, is unlike them in this feature, nor is it like the figure in Bell's work. It has a spine-like process situated as in the figure referred to, but instead of the edge of the arm being continued on the same plane beyond it, it slopes down to the joint, as in the case of the other two specimens, but at a greater angle. Thus Bell's figure, my small specimen, and my two large specimens, illustrate the development of a spine into a marginal tooth, the stages possibly indicating different ages. I do not say this is so, but it is reasonable to infer it.

Again Bell says that the left hand is the larger, but in one of my two new specimens the right hand is the larger, and as the structure of the hands is so very different, this is an important feature, as it shows that it cannot be relied on to determine a species.

The larger hand is very massive, rounded, and smooth, except towards the fingers, where it is armed with rather long, pale coloured hairs on the inner surface. On the outer edge of the large claw there is a rib-like projection terminating forward in a spine, just above the fixed finger. This is not the case with the small hand. The movable finger of the large hand is very much hooked, and shuts over the curious fixed finger like the beak of a Crossbill. The fingers on the small hand are much straighter, larger in proportion to the size of the hand, though they too cross like those on the large hand, but to a less extent. In my specimens also the rostrum is very small and simple, the eyes protected by arched continuations of the carapace, which becomes transparent, as if to permit the animal to see through it, whilst it affords a screen to its organs of vision. The tail plates are large and beautifully fringed with setæ, and the central plate is armed with four spines pointing downwards.

We now come to the most interesting point in the structure of this or perhaps any other Crustacean. The last segment of the abdomen, not counting the tail segment, is armed on either side with two spines of a curved, triangular form, which are articulated into the lower part of the side of the segment, but deflected from it at such an angle as to allow them to overlap and rest on the two movable flanges of the tail. It is known that this animal possesses the power of producing sound in the form of a sharp click, and, although I have never had the good fortune to observe it in a living state, I am convinced that this sound is no doubt produced by bringing the tail plates sharply over these spines. In fact, I produced a sound, similar to what I imagine to be the correct one, by "clicking" a pin over the spines of my dead specimens. Mr. Sinel, of Jersey, informs me that he had these specimens alive for some time in a glass jar of sea-water, and was astonished at the loudness of the sound produced, even in some depth of water. He tells me it was as loud as that produced by striking the palm of the left hand with three fingers of the right hand, and so sharp that it seemed as though the glass of the jar were flying in cracks, as glass does on sudden changes of temperature. It would be very interesting to know the advantages derived from this sound-producing power by the animal itself, whether it be in some way a sexual guide, or whether it acts as a terror to its enemies, or a means of giving notice of approaching danger. Any observations on these points from those fortunate enough to obtain living specimens would be of great value.

The colour of my specimens is a bright sealing-wax red, shaded off to a delicate rose tint on the thorax; the large claws are shaded with purple, and the legs and tail plates are pale salmon-colour.

Mr. Sinel informs me that the bright red is the living colour, but that the female is inclined to a browner hue; he noticed, however, that when in a glass jar, and undisturbed, the colours generally assumed a transparent brownish tint, but immediately became scarlet again when the animals were alarmed or irritated. *Alpheus ruber* is with spawn in February, and Mr. Sinel has just succeeded (March) in hatching out the zoæ.

(To be continued.)

NOTE.—I shall be happy to correspond with any naturalists living near the shore with a view to obtaining information regarding any Crustacea that may come under their notice. I shall also be glad to exchange specimens, and to assist, in any way in my power, any one who wishes to work at this interesting group, and give information as to the best mode of obtaining, preserving, and identifying specimens. — E. LOVETT (West Burton House Outram Road, Croydon).

## NOTES AND QUERIES.

**The late Charles William Peach.**—We extract from the 'Scotsman' the following biographical notice of a very remarkable man. Charles William Peach died on the 28th of February, at his residence in Haddington Place, Leith Walk. He was born in the year 1800 at Wansford, in Northamptonshire, where he lived till early manhood. His birth-place being on the outskirts of the Bedford Purlieus, one of the great English forests, he became passionately addicted to field sports, and there can be no doubt that the keen observation developed in the pursuit of sport stood him in good stead when in after years his mind was directed to the more noble pursuit of Science. Having joined the Coastguard service while still a young man, he was stationed at various places on the east and south coasts of England. Those were the palmy days of smuggling, and Mr. Peach, who was always an indefatigable officer, had many hand-to-hand encounters with some of the most desperate characters engaged in the lawless traffic. It was while stationed at Cromer, in Norfolk, where the sea has long been known to be eating the land by washing down the clayey cliffs, thus exposing the remains of Mammalia, that his attention was first attracted to the objects cast up on the beach. The living marine animals and Algæ, on the one hand, led him to study Marine Zoology and Algology; while, on the other hand, the remains of the dead animals naturally aroused him to the study of Palæontology, to all which branches of Science he afterwards made many valuable contributions. These studies brought him into contact with other workers in the same fields, many of whom are the highest authorities in their several departments—in Zoology, Darwin, Milne-Edwards, Edward Forbes, Allman, Owen, Huxley, Wyville, Thompson, Bowerbank, Alder, Hincks; in Algology, Harvey and Mrs. Greville; in Geology and Palæontology, Buckland, De la Bèche, Murchison, Lyell, Hugh Miller, Nicol, Geikie, all of whom have been more or less indebted to him for direct help in their researches, as reference to their works will fully bear out. Many of his discoveries, especially his earlier ones, were first announced by him before the British Association, his presence at whose meetings will be well remembered by not a few of the older members. Having been transferred to the Customs, Mr. Peach eventually came to Scotland, being stationed first at Peterhead, and afterwards at Wick. It was while at this latter place that he made the acquaintance of Robert Dick, the Thurso baker and geologist; and the account of their friendship and mutual studies is contained in some of the most interesting chapters in Dr. Smiles's 'Life of Robert Dick,' part of which book is devoted to a biographical sketch of Mr. Peach. It was also while stationed in the north that he made the discoveries at Durness of those fossils which are now our means of determining the geological age of the Highland rocks, as by similar discoveries he had previously obtained the key to the age of great part of the older rocks of Cornwall and Devon. Not only, however, among scientific men had Mr. Peach a large acquaintance, but his genial and sympathetic nature attached to him also to many men of literary pursuits, amongst whom was Lord Tennyson, who was a frequent guest in Mr. Peach's house at Fowey, in Cornwall, and with whom he formed a life-long friendship. Hugh Miller and Robert Chambers were numbered amongst his more intimate Scottish friends.

**Zoological Lectures at Oxford.**—Among the lectures announced for delivery at Oxford next term by University Professors are a course on "The Mammalia," by Prof. Moseley, and a course on "The Haustellated Orders of Winged Arthropoda," by Prof. Westwood. Mr. W. B. Spencer, one of the Demonstrators of Anatomy, will lecture on Embryology.

## MAMMALIA.

**Variety of the Squirrel.**—A variety of the Squirrel perhaps worth notice was killed last summer in the extensive fir woods near Ringwood. It was remarkable both for size and colour. It was a male and weighed nearly seventeen ounces, or five or six ounces heavier than an ordinary Squirrel. Its colour was a pale brownish grey, resembling that of the common wild Rabbit, but with indications of the normal brown colour on the cheeks, feet, and flanks. The ears were destitute of any decorative tufts, and the tail somewhat scantily furnished, but the longest hairs thereon were white; the condition, however, of both ears and tail is doubtless characteristic of the season. [So also is the colour, Squirrels being much greyer in winter than in summer. If the specimen in question was killed in *early* summer it might not have assumed its nuptial pelage, or if procured in *late* summer or autumn it may have prematurely donned its winter garb.—Ed.] It was frequently seen in different parts of the woods before it was killed, and for a time was unmolested; but having been detected in what the gamekeeper considered too close proximity to his Pheasant-coops, he shot it as a suspected depredator. I have been informed that a specimen almost exactly similar in size and colour was killed the previous year in some fir woods a few miles distant.—G. B. Corbin (Ringwood, Hants).

## BIRDS.

**The Destruction of Birds for Plumes.**—The American Ornithological Society has issued a strongly-worded protest against the wholesale destruction of birds of brilliant plumage for the decoration of ladies' hats. The killing of birds for mercenary purposes has increased of late years in the United States to an almost incredible extent, and already in some species there is a startling decrease in the number of the feathered tribe. Every year orders go north, south, and west for hundreds of thousands of birds to supply "the trade." In fact, unless protection comes soon for many of the more beautiful and prized species, it will come too late. By the statutes of most of the States, the favourite song birds of America are shielded from destruction, and game birds are also protected by law through a greater part of the year. But, so long as the demand for bird-plumage lasts, the supply will continue, even though the price asked for favourite "wings" rises with ominous and alarming rapidity. One thing only will arrest the wanton destruction of the birds, and that is a change of fashion brought about by the concerted action of thoughtful and humane women. The American ornithologists appeal to the ladies of New York to make a pronounced stand on behalf of the birds and against the prevailing barbaric fashions. It is obvious that little good can result from individuals challenging public taste, and therefore women's leagues are to be formed in the United States, with head-quarters at the Museum of Natural History in the Central Park, New York, to bring about, by reason and persuasion, a welcome change of a cruel fashion. In London, through the instrumentality of Mr. G. S. Musgrave, an association has been formed, called "The Selborne Society," having the same object in view as the American society. Mr. Musgrave, whose address is 45, Holland Park, Kensington, W., has issued a pamphlet on the subject, which he will be glad to forward on receipt of a penny stamp, and he wishes those who desire to support the movement to forward their names to him, together with a donation, however small, to aid in defraying the cost of printing and advertising. We trust that his efforts to check the unreasonable destruction of bird-life, which has for a long time been carried on merely to comply with a fashion, may ultimately prove successful.

**Migration of Birds on the West Coast of England and Wales.**—As the member of the British Association Committee in charge of the above section of the Migration Report, I shall be glad to receive from ornithologists and others, as early as possible, observations on the migratory movements of all species, and on the occurrence of rare or uncommon visitors, within the region (inclusive of inland localities) during the spring and autumn of 1885. When possible, the notes should be accompanied by observations on the direction of the wind, and general state of the weather at the time. By such assistance it is hoped to make the Report more complete, and all co-operation will be duly acknowledged therein.—Wm. Eagle Clarke (18, Claremont Road, Headingley, Leeds).

**Birds used for Sport in China.**—In the December number of 'The Zoologist,' at p. 447, there is an interesting article entitled, "Birds used for Sport in China," wherein it is stated that Snipe, as well as Quail, are flown at with the Sparrowhawk. M. Pichot remarks that "possibly the Snipe of that country is slower and heavier on the wing than ours." Perhaps the Snipe in question may be the Painted Snipe (*Rhynchæa bengalensis*), not an uncommon species in Southern India and China. They lie close, their flight is comparatively heavy and not sustained, and this bird would be readily captured by the Sparrowhawk.—Henry Hadfield (Ventnor, Isle of Wight).

**Changes of Plumage in the Kestrel.**—Mr. Cecil Smith's remarks on the change of plumage in the male Kestrel (p. 110) induce me to send a short notice of a fact observed by me bearing on the question. Some years ago, when I was staying at a friend's house, it was found that a hawk had been making free with some of the tame-bred Pheasants. The gamekeepers discovered the nest within twenty yards of the coops, which had been left undisturbed till the young hawks were half-grown, and lay up to shoot the plunderers. About 7.30 next morning I heard a shot fired, and on going down found the keeper with a full-plumaged male bird. A couple of hours afterwards he shot and brought up another bird, which he took for the female (it was killed on the edge of the nest), but on examination I saw at once that it was a young male, in immature (female) plumage, with the exception of a few blue feathers on the upper tail-coverts. We see, then, that a bird at least a year old had only begun to assume adult plumage; that he was then, I suppose, unmated; that though not eligible as a husband, the hen adopted him as a foster-father; that two hours were sufficient for her to find a mate in a country where all vermin had been systematically killed down for years. Again; when do Cuckoos assume adult plumage? I once saw a Cuckoo in Leadenhall Market in May in nestling plumage, except one or two grey feathers in the head.—H. T. Frere (Burston Rectory, Diss).

**Habits of the Arctic Skua as observed in Caithness.**—As the Acrtic Skua (*Lestris parasiticus*) seems to be rare in England, and its habits not much known there, I will give a short account of the bird, as observed here every season during the breeding-time. It is very well known in Orkney and Shetland, and breeds in many of the islands, as also in the Hebrides. Sir William Jardine met with it in Sutherlandshire in June, but I have not heard of its nest having been actually found in that county. In Caithnesshire it is well known, and is a very abundant species, breeding in considerable numbers on the wide moors and marshy tracts of the interior of the county. Its head quarters some years ago seemed to be a low and remote piece of moorland of this description in Watten parish, surrounded by thousands of acres of grouse moors and sheep grazings, and studded by numbers of small lochs, containing mossy mounds and islands of varied size and shape. This was a favourite breeding-station of the Arctic Skua. The Lesser Black-blacked Gull, the Common Gull, and a good many of the rarer swimming and wading birds also resorted to these pools and the neighbouring swamps for the purpose of nidification. It is to be feared that this interesting colony is now thoroughly broken up, the property having a few years ago come into the possession of an English nobleman, whose gamekeeper promptly declared war against the Gulls ; and the ultimate result may be surmised from the fact that in the first year, among other birds, no fewer than eighty Arctic Skuas were destroyed ! Wick Bay and its neighbourhood, during the herring-fishing season, afford abundant opportunities for observing the style of hunting practised by the Arctic Skua. A pair of these birds are stationed on the point of some jutting rock, or other prominent position, apparently engaged in preening their dusky plumage, and enjoying the mild summer evening; but in reality keeping a sharp look-out among the multitude of gulls of different species, Kittiwakes, Terns, &c., which hover around or rest upon the sea. Suddenly a clamour is raised by some gull—more fortunate than discreet—who has secured a fish or other prize, when its neighbours, in twos and threes, or half a dozen, crowd in, and, with appetites on the stretch, essay to snatch the tempting morsel from the very throat of the rightful owner. The shriek of triumph uttered by the poor bird as the prize is at last safely stowed away is the signal for the Skuas, who spring into the air with all the eagerness and almost the speed of the falcon, immediately give chase to the Gull, which at once perceives its danger, and strives to evade its enemies by mounting higher into the air. And now ensues a chase which is well worthy of observation, the furious assaults and sudden onsets of the pirates being for a time skilfully evaded by the Gull, which turns and doubles, and practises every possible manœuvre to shake them off, the positions of pursuers and pursued changing the while, so as to render it difficult to follow the progress of the contest. The dark plumage and rapid flight of the Skuas, pressing keenly but silently upon their victim, contrasted with the snow-white garb and noisy clamour of the gull, must, at such times, attract the attention of the least observant spectator. In this way the chase continues, until the poor Gull, thoroughly exhausted, disgorges its load of fish, which is immediately caught by the Skua. By thus pursuing and harassing the whole Gull tribe, from the Great Black-backed and Glaucous Gulls downwards, the Skuas obtain a subsistence ; their victims in despair disgorging their recently swallowed—or even halfdigested food—which is often caught before it reaches the surface of the water. The Skuas also plunder other sea-birds of their eggs, and destroy numbers of young birds, eggs, &c., in the hills, the Arctic Skua having been shot in this county while in the act of killing and devouring a brood of young grouse.—W. Reid (Wick).

**Hybrid Finches.**—In reference to the Editor's note on this subject (p. 109), I may mention that at the Canary and Cage-Bird Show at the Westminster Aquarium, in January last, the following hybrid finches were exhibited:—Two Goldfinch and Greenfinch males, six months and one year old respectively, by Mr. E. Hopton and Mr. W. Veale. Linnet and Greenfinch male, by Mr. J. Leslie. Two Bullfinch and Goldfinch males, by Mr. George Fowler, jun., and Mr. J. H. Scothern; one of these, exhibited by the latter, having the general shape of the Bullfinch, but somewhat modified, with a beautiful orange blaze. The last-named exhibitor also showed a Goldfinch and Redpoll male, six months old, and Mr. S. Hayward a Greenfinch and Goldfinch male of one year. Messrs. Welham and Hunt had a bird in this class catalogued as a Chaffinch mule, two years old.—O. V. Aplin (Great Bourton, near Banbury).

**Nutcracker in Hampshire.**—On February 8th at Exbury, in Hampshire, on the skirts of the New Forest, I saw a Nutcracker, *Nucifraga caryocatactes*. It was close to the house where I was staying, and I recognised the note (with which one gets very familiar in Switzerland and the Alps generally) as I laid in bed. I got up at once, and saw my friend busy amongst the cones of a large fir tree near the windows of my room. Perhaps the bird is commoner in this country than I suppose, but I never saw or heard one here before.—A. G. Renshaw (2, Suffolk Lane, E.C.).

[The last we heard of was one shot near Eddington, Kent, on the 17th November last. See Zool. 1885, p. 480.—Ed.]

**Velvet Scoter in Nottinghamshire.**—On looking through the collection at Welbeck Abbey I came across a duck of this species labelled "shot on the lake here, Nov. 6th, 1884." As this is the first and only occurrence of this duck in Nottinghamshire, so far as I am aware, I think it worthy of record in 'The Zoologist.'—J. Whitaker (Rainworth Lodge, Notts).

**Varieties of Common Birds.**—Two Jays were shot at Clumber in July last; one was quite white (though not an albino); the other was white, with dark grey markings on wing-coverts and back. The following varieties have come under my notice:—A pale cream Snipe with markings in brown, shot in Eastern Counties, given me by Mr. Edward Bidwell; a white Woodcock with faint grey markings on back, shot in Notts a few years back, given me by Mr. Jones, of Retford; a Razorbill with back of sandy colour, wings and tail cream, shot in Ireland, given me by Mr. Seebohm; a light chocolate-coloured Blackbird, also one of a pale slate-colour; several varieties of the House Sparrow (shot in Notts), a very pretty cream Redpoll, a sandy Yellowhammer, and a slight variety of Common Sandpiper; also a Dunlin with nearly white wings, given me by Mr. Mosley: these, with two varieties of Starlings and a white Magpie, have been added to my collection during the last few months.—J. WHITAKER (Rainworth Lodge, Notts).

**Occurrence of the European Woodcock in Lower Sind.**—Mr. Murray, the Curator of the Museum at Karachi, has lately shown me the skin of a Woodcock, which he had just prepared. This bird was picked up dead in General Marsden's garden at Karachi on Dec. 20th, 1885; it had not a particle of fat upon it, and probably it had died from starvation. I think I am right in stating that this is only the second recorded occurrence of this bird in Sind.—E. F. BECHER, Capt. R. A. (Karachi, Dec. 30th, 1885).

**Roosting Habits of the Common Wren.**—Although I have known instances of the Common Wren resorting to its old nest to roost in the winter, I never before heard of their roosting in the way they have been observed to do of late, namely, in a cocoa-nut shell suspended from the ceiling of the verandah of a house at St. Lawrence. Though there is a plant in this nut-shell, Wrens—ten in number—regularly roosted in it, till the occupant of the house, to give them more room, removed the plant, causing them to forsake the shell. To enable these ten birds to lay up in so confined a space they would be closely packed.—HENRY HADFIELD.

## FISHES.

**Importation of American Fish Ova.**—Large consignments of Whitefish and Trout ova have arrived at the South Kensington Aquarium from America as a presentation from the Commissioners of that country. In consequence of the success attending the introduction of the first-named fish into this country last year, special attention is to be given to their culture during the present season with a view to their distribution in some of our chief lakes. The National Fish Culture Association have extended their hatchery, and, in order to secure healthy embryos, have adopted the new method, *viz.* the "underflow" system, which has been found to incubate the ova at a less rate of mortality than the "overflow" system.

**Large Trout in the Hampshire Avon.**—On the 23rd or 24th February a friend of mine (Mr. G. L. Polden), whilst fishing for Salmon, caught a Trout which is perhaps worth recording. It weighed seven pounds two ounces some time after it had been taken out of the water, and measured two feet three inches. It was plump and well proportioned, but not being "in season" its colours were dull. Whether it was a true River Trout I am not prepared to say, or, if a Sea Trout, I do not know that its weight is at all remarkable; but I have been told on good authority that on previous occasions Trout weighing from eighteen to twenty pounds have been taken from the Avon near Salisbury. The fish recently taken was a male, and had the horny projection of the lower jaw well developed. Is this a mark of age, or sex, or both? It is a generally received opinion amongst anglers in this locality that its presence denotes an old male, and that its development is increased by a sojourn in fresh water.—G. B. CORBIN (Ringwood).

[The "horny projection of the lower jaw" is indicative of sex, and is peculiar to the male.—ED.]

# SCIENTIFIC SOCIETIES.

## LINNEAN SOCIETY OF LONDON.

*March* 4, 1886.—Sir JOHN LUBBOCK, Bart., F.R.S., President, in the chair.

Mr. Gilbert C. Bourne, Mr. William Henry Catlett, and Mr. Thomas A. Cotton (N. Z.), were elected Fellows of the Society.

A paper was read, "Description of *Strongylus Armfieldi*, with observations on *Strongylus tetracanthus*," by Professor Spencer T. Cobbold. Of Armfield's Strongyle, he drew attention to the morphology of the hood and its rays, to the position of the vulva, and to the structure of the embryo He afterwards contrasted these peculiarities with those of allied forms. Regarding his observations on the four-spined Strongyle, the following are his conclusions:—(1) The eggs are expelled from their parent in a state of fine yolk-cleavage; (2) the embryos are formed after egg-expulsion, and in a few days escape from their envelopes, undergoing a primary change of skin in moist earth during warm weather; (3) as rhabditiform nematoids they enjoy a more or less prolonged existence, probably living many weeks in this state; (4) in all likelihood an intermediary host is unnecessary; (5) the rhabdiform larvæ are passively transferred to their equine bearers either without fresh fodder or whilst the animals are grazing; (6) passively transferred to the intestinal canal, thence they enter the walls of the cœcum and colon, encyst themselves, and, according to Leuckart, undergo another change of skin; (7) their presence in the intestinal walls is associated with pathological conditions, which frequently prove fatal to the bearer, sometimes creating severe epizooty; (8) ordinarily the young worms perforate their cysts and migrate to the lumen of the bowel, where they already afford external indications of sex (Trichonema stage of growth); (9) they next form cocoons of the agglutination of vegetable *dèbris* within the gut and undergo a third ecdysis, attended with intestinal metamorphosis: (10) the formation of the internal sexual organs and the completion of the definite form is acquired within the colon of the host.

*March* 18, 1886.—Sir JOHN LUBBOCK, Bart., F.R.S., President, in the chair.

The Hon. J. T. Boscawen, Dr. P. Herbert Carpenter, and Arthur E. Gibbs were elected Fellows of the Society.

The only zoological paper read was "On the Madreporaria of the Mergui Archipelago," by Prof. T. Martin Duncan. The large collections from Mergui were obtained personally by Dr. John Anderson, F.R.S., Curator of the Imperial Museum of India, Calcutta. The fauna consists of eighty-four species, of which thirteen are new to Science. The new species are described, and their variability commented upon. The alliances of the fauna as a whole are with that of the Red Sea, Indian Ocean, Chinese seas, and of the great islands to the east. The author makes frequent reference to the coral alliances with a fauna described by Verrill many years ago from Panama. The fauna contains so many encrusting species of corals that they give it a definite facies. In conclusion the distinctness of the tertiary coral faunas of India from that of Mergui is announced.—J. MURIE.

---

## ZOOLOGICAL SOCIETY OF LONDON.

*March* 2, 1886.—Dr. ST. GEORGE MIVART, F.R.S., Vice-President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of February, and called attention to the receipt of five examples of a large Batrachian of the Argentine Republic, there called "Escuerzo" (*Ceratophrys ornata*), presented by Dr. Frederick C. Strutt, and to a Mantled Buzzard (*Leucopternis palliata*) from Brazil, purchased February 15th, being the first example of this fine bird of prey received by the Society.

Mr. J. G. Millais exhibited an adult specimen of the Ivory Gull, shot by himself near Thurso, in December, 1885; also a young example of the same species, obtained in Scotland in 1879.

Mr. T. D. A. Cockerell exhibited a living Slug of the genus *Parmacella*, obtained at Tangier, and probably referable to *P. valenciennesi*.

A communication was read from Prof. R. Collett, containing an account of a new Pediculate fish from the sea off Madeira belonging to the family Ceratiidæ, which the author proposed to call *Linophryne lucifer*.

Mr. P. L. Sclater read a note on the external characters of the head of *Rhinoceros simus* as compared with those of *R. bicornis*.

Mr. F. E. Beddard read a note on the air-sacs of the Cassowary.

A second paper by Mr. Beddard treated of the syrinx and some other points in the anatomy of certain forms of Caprimulgidæ.

*March* 16, 1886.—Prof. W. H. Flower, LL.D., F.R.S., President, in the chair.

Mr. F. D. Godman exhibited some examples of a butterfly, *Danais plexippus*, from various localities, and made remarks on its distribution, which of late years seemed to have become very widely extended.

Prof. F. Jeffrey Bell made some remarks on the *Balanoglossus* recently discovered in the Island of Herm, Channel Islands, of which he had exhibited a specimen on a former occasion.

A communication was read from the Rev. H. S. Gorham, containing descriptions of some new genera and species of Coleoptera of the family Endomychidæ from various localities.

A communication was read from Dr. R. J. Anderson, of Queen's College, Galway, containing observations on the pelvisternum in certain Vertebrates.

Prof. F. Jeffrey Bell read a paper on the generic characters of Planarians, basing his observations mainly on a specimen of a Planarian recently found living in this country, and believed to be referable to *Bipalium kewense*.

Mr. F. E. Beddard read a note on the structure of a large species of Earthworm from New Caledonia, of which examples had been recently received from Mr. E. L. Layard, H.B.M. Consul for New Caledonia.—P. L. Sclater, *Secretary*.

## Entomological Society of London.

*March* 3, 1886.—R. M'Lachlan, F.R.S., President, in the chair.

Mr. J. M. C. Johnston was elected a Fellow, and Cavaliere Piero Bargagli, of Florence, formerly Secretary of the Entomological Society of Italy, was elected a Foreign Member.

Mr. Pascoe exhibited a curious larva, probably of a *Papilio*, from Pará; and a pupa-case of *Anosia Plexippus* (*Danais Archippus*), from the same locality.

Mr. W. J. Williams exhibited, on behalf of Mr. C. Bartlett, a gigantic hairy and spiny larva, perhaps allied to *Gastropacha*, from Madagascar.

Mr. C. O. Waterhouse exhibited *Rutela rufipennis*, *Doryphora Haroldi*, and some other undescribed species of Coleoptera from Colombia.

Mr. Billups exhibited a specimen of *Cholus Forbesii*,—a South American species,—found alive in a horticultural sale-room in London.

Mr. Eland Shaw referred to the exhibition, at the last meeting, of *Tettix australis* from New South Wales, and called attention to the fact that the aquatic habits of certain species of the genus *Tettix* in India had been previously recorded by Leopold Fischer.

Dr. Fritz Müller communicated a paper on Fig Insects from the neighbourhood of the River Itajahi, South America; and Prof. Meldola exhibited, on behalf of Dr. Fritz Müller, a number of specimens of the insects described in the paper.

Mr. E. B. Poulton, M.A., F.Z.S., read "Further Notes upon Lepidopterous Larvæ and Pupæ, including an account of the loss of weight in the freshly-formed pupa." The paper included notes upon points in the ontogeny of *Smerinthus* larvæ, and a description and figure of the bifid and hairy caudal horn in the newly-hatched *Smerinthus populi*. The adult larva of *Acherontia atropos* was compared with that of *Sphinx ligustri*, and the as yet unknown appearance of the former in earlier stages was predicted. Hitherto unnoticed eye-like marks were pointed out in the terrifying attitude of *Chœrocampa elpenor*, and the terrifying attitude of *Dicranura vinula* was described, and its defensive fluid was shown to be strong formic acid. An eversible gland was described in *Orgyia pudibunda*, and the protection of *Acronycta leporina* was explained by its resemblance to a cocoon and the darkening of its hairs when full-fed. A valvular aperture in the cocoons of *Chloephora prasinana*, &c., was described, enabling the imagos to emerge. There were also notes upon *Paniscus cephalotes*, parasitic on the larva of *D. vinula*, and tables showing the immense loss of weight in newly-exposed lepidopterous pupæ due to evaporation from the moist skin. Mr. Poulton also exhibited larvæ of *Paniscus cephalotes*. A discussion followed the reading of this paper, in which Messrs. Kirby, White, Slater, and Poulton took part.—H. Goss.

## NOTICES OF NEW BOOKS.

*The Badminton Library of Sports and Pastimes.* Edited by His Grace the Duke of Beaufort, K.G. Vol. I. Hunting. By the Duke of Beaufort and Mowbray Morris. Vols. II. and III. Fishing. By Cholmondeley Pennell. 8vo. London: Longmans & Co. 1885.

There was a time when the reigning monarch in England, fearing lest the science of hunting should fall into decay, as it appeared likely to do for want of proper encouragement, entreated the French king to permit some of the leading sportsmen in France to pay a visit to the English Court in order to instruct the English in the technicalities of a sport in which at that period they were confessedly behind their Gallic neighbours; and James I., however deficient in qualities befitting a king, wa too good a sportsman to let any false pride stand in the way of advancing and encouraging the particular field-sports to which he was personally so much addicted. The best books on the subject in his day were written in French, and even our own Turbervile, who did such good service by the publication of his 'Bookes of Hunting and Falconrie' in 1575 (a second edition of which appeared in 1611), was obliged to admit his indebtedness to foreign sources for the bulk of the information which he had to impart. Tardif, Du Fouilloux, and De Franchières were the authors then most studied by educated sportsmen, and the arrival in this country of such disciples of the old French school as the Marquis de Vitry and his compatriots, so far from exciting a feeling of jealousy, was hailed by English sportsmen with enthusiastic satisfaction. To this circumstance, entirely lost sight of by English historians, we are probably indebted for the maintenance of that skill in the chase for which Englishmen are now everywhere renowned, but which, at the critical period referred to, was on the verge of decadence, for want of leaders competent and willing to instruct the rising generation.

Times have altered since then, and we have now only to look into any modern French journal devoted to sport to see that our Gallic neighbours, in all that relates to horses and hounds, lose no opportunity, so to say, of borrowing a leaf from our book. And yet, although Englishmen have once more asserted their superiority in the hunting field, we look forward with some anxiety to the future of sport in this country, seeing how beset it is with difficulties at the present day. When masters of hounds and huntsmen are "boycotted," and hounds maimed or poisoned; when a so-called royal Society, with more funds than judgment at its disposal, prosecutes a royal huntsman for cruelty in taking a hunted stag; when would-be legislators, under pretence of amending the game-laws, do their best to abolish them altogether, we may well feel some concern for the future.

None too soon has a society been formed for the protection and encouragement of field-sports,* and, while wishing success to its members in their laudable object, we hail with satisfaction, as another "ante-abolition of sport movement," the scheme of

---

* "The Field Sports Protection and Encouragement Association." President, Lord Fitzhardinge, M.F.H.; Secretary, G. A. Battcock, 4, Carlton Street, Waterloo Place.

His Grace of Beaufort to increase the popularity of field sports in this country by the publication of an instructive series of manuals undertaken by specialists in every branch of sport.

Three volumes of this series are now before us, one on Hunting, and two on Fishing, by the authors whose names are above mentioned, and we understand that, amongst others in preparation, is a volume on Game-shooting by Lord Walsingham, and another on Wildfowl-shooting by Sir R. Payne Gallwey. It augurs well, we think, for the interests of sportsmen generally when proficients such as these are willing to become authors and impart information on subjects upon which, from personal knowledge and experience, they are so well qualified to write.

We have often had occasion to remark upon the intimate connection between Field Sports and Natural History, a sportsman's success in many cases depending upon his knowledge of the haunts and habits of the wild creatures he pursues. We shall, in this notice of the volumes before us, consider their merits chiefly from the naturalist's point of view, avoiding the technicalities of sport as being less suited for discussion in this journal.

The volume on Hunting appropriately commences with a chapter on the history and literature of the chase, but, although very agreeably written, it falls far short, in our opinion, of what such a chapter ought to be. In the first place, the historical notices are not given in chronological sequence; for example, after glancing at the Book of St, Albans (1486), and the Treatises of Turbervile (1575), and Cockaine (1591), we are carried back to the days of Canute and Edward the Confessor, when the important forest laws of the former and hunting proclivities of the latter are disposed of in about a dozen lines! In the next place, there are some extraordinary gaps in this "history," notably the omission to give any information respecting Hunting in the days of James the First, who spent more time in the hunting field than in the council chamber. This oversight is the more remarkable, because the events of that monarch's reign, as we have already hinted, have an important bearing on the history of the chase in England, and ample materials of much interest to sportsmen are available for a chapter on the subject, and a long chapter, too. Nor is anything said of the influence which the French and Italian Schools of Hunting exercised upon our ancestors at this period in the history of the chase in England.

The Appendix to this chapter, entitled a "Bibliography of Hunting and Hunters," stands in need of considerable revision. We are afraid to say how many errors we have detected in these nine pages, chiefly, it would seem, from an omission to consult the originals of the works cited. The date of the first edition of the 'Boke of St. Albans' is 1486, not 1481, as stated on the first page of the Appendix. In the succeeding title there is an extraordinary confusion of ideas. Thus the title runs:—

> The Treatises of Hawking, Hunting, Coat Armour, Fishing, and Blazing of Arms. Edited by Joseph Haselwood, printed by Wynkyn de Worde. Westminster, 1486. Fol. Another edition of the above.

From this it might be inferred by the unwary that Joseph Haslewood was a contemporary of Wynkyn de Worde, that the edition of 1486 was printed at Westminster, and that there was an earlier edition than this of the work. The facts are, in 1486 the first edition was printed at St. Albans, that in 1496 the second edition was printed by Wynkyn de Worde at Westminster, and that in 1810 Joseph Haslewood reprinted Wynkyn de Worde's edition with an excellent introduction of his own.* Of the numerous subsequent editions of this work the Appendix in question mentions but three. Of Gervase Markham's at one time popular work, 'Country Contentments,' only one of the fourteen editions is noticed, the title of his 'Gentleman's Academie,' 1595, is incorrectly quoted, and no mention is made of his 4to treatise on the Hunting Horse, 1599. There are numerous errors in authors' names (those of Turbervile, Somervile, Cockaine, and others, being mis-spelled), as also in the sizes of books, Gryndall's work, for example, being a quarto, not a folio, and Blome's being a folio, not a quarto.

Nor is the bibliography so complete as it might be made, several notable works having been overlooked, as, for instance, the excellent translation of Arrian's "Cynegeticus,' by "a graduate of medicine,' printed in 1831, with an account of the *Canes venatici* of classical antiquity. For our own part we should have included the best editions of the works of Xenophon,

---

* It appears to have escaped the notice of critics that, although Haslewood's title-page bears date 1810, his Introduction is dated 30th Oct., 1811.

Arrian, and Oppian on Hunting, and as the old French treatise of Guillaume Twici is cited, mention should also have been made of the better-known works of Tardif and Du Fouilloux, especially as it was to the last-named author that our English Turbervile was mainly indebted when compiling his 'Noble Art of Venerie, or Hunting,' in 1575. Amongst works of later date we should have expected to find W. Blane's "Cynegetica: or Essays on Sporting,' consisting of observations on Hare Hunting, &c., 8vo, London, 1788, a book now seldom to be met with, but none the less deserving of mention.

It is unnecessary, however, to pursue our criticism of this part of the Badminton volume further. Suffice it to say it is the weakest portion of the book.

The second chapter of some fifty pages is entitled 'Beasts of the Chase,' and deals with the Stag, Fox, and Hare, in a highly entertaining manner, descriptions of the habits of these animals being pleasantly blended with instructions for hunting them. Passing over chapters III. to X., which deal with such subjects as the Stable, Kennel, Hunt Servants, the Horse, the Rider, &c., we come to Chapter XI., one of the best in the book, on "The Otter and his Ways."

Human nature, we know, is little inclined to believe what it cannot see or realise, and doubtless the Otter and his habits are mysteries to most men, inasmuch as he is strictly a nocturnal animal, never quitting his stronghold, except by compulsion, till after sunset, and then only to seek his prey and to disappear again with the first blush of morn. Then at night, if intruded on by man, the dark colour of his fur conceals him from view, while at the same time so eel-like and gentle are his movements in the water, that it would require a fine ear indeed to note his whereabouts:—

> "The ways of an Otter," says our author, "are probably the least known and the most inscrutable of all our wild animals: so much so that its very existence is widely doubted in districts where Otter hounds are never seen; and yet every river in the land pays tribute in turn to this night-wandering marauder."

In the following passage we are glad to find an assurance that, in spite of persecution, there is no reason to apprehend that the Otter is in any immediate danger of becoming extinct:—

> "Many think the Otter to be well nigh exterminated, and that its fate will soon be that of the Beaver and Yellow-breasted Marten, now no longer seen amongst us. But there is no ground whatever for this belief; Otters, as I will presently show, by testimony of unquestionable authority, are still as plentiful in our waters at the present day as they were fifty or sixty years ago."

The whole of this chapter, a long one, and the last in the book, will well repay perusal.

Amongst the appendices which follow, the only one calling for notice in these pages is that on the Bibliography of Hunting already criticised.

The two volumes on "Fishing," both by Mr. Cholmondeley Pennell, are devoted the one to Salmon and Trout, the other to Pike and Coarse Fish. On the whole, it may be said that these two volumes contain fewer observations on the natural history of freshwater fish than on the various methods of catching them, although we must not omit to state that in one of the volumes there is a long chapter on the natural history of British *Salmonidæ*.

In this Chapter Mr. Pennell divides the different species of *Salmonidæ* into two groups: the silver or migratory, and the yellow or non-migratory; the first group comprising those fish which migrate periodically to or from the sea, *viz.*, the true Salmon, the Bull Trout, and the Sea Trout, and the second group those whose habits usually confine them to fresh water, lake or river, *viz.*, the Common or Yellow Trout, the Great Lake Trout, and the Grayling. "This grouping," says Mr. Pennell, "commends itself not only by its simplicity and convenience of classification, but also by such broadly-marked distinctions in regard to habits, localities, &c., as must override distinctions founded upon mere technical differences."

The remarks on Thames Trout (pp. 164-5) will have an interest for many persons besides professional anglers, and we shall be much mistaken if the practical advice given in the chapter on Thames Trout Fishing, by Mr. H. R. Francis (pp. 410-33) does not make numerous converts to the gentle art amongst those who have hitherto been too fond of quoting the definition of a fishing-rod attributed to Dr. Johnson.

BRITISH 27 AP 86 MUSEUM